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Formerly Utilized Sites Remedial Action Program (FUSRAP)

ADMINISTRATIVE RECORD

for Maywood, New Jersey



U.S. Department of Energy

CANCER CLUSTER STUDY FOR WEST CENTRAL AVENUE AND ECCLESTONE PLACE
MAYWOOD, NEW JERSEY, 8/86, UPDATED 12/90.

Though, only one of these homes is designated for remedial action and is part of the Maywood Site, the rest of the homes in this area are directly affected by dangerous chemicals and heavy metals in the soil and water in the area. These residents are also exposed to high levels of radiation emanating from Stepan Company property, the MISS property, and the Susquehanna Railroad property.

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Member of the Board of Health of Maywood, N.J.

This document was prepared to show that the residents around portions of the Maywood site, which includes commercial, federal, state, and municipal properties in Maywood, Rochelle Park, and Lodi, N.J., are being exposed to dangerous levels of radiation, carcinogenic chemicals, and heavy metals. The portion of the Maywood site referred to is the MISS, Stepan Company property, and portions of Sears and vicinity properties. The residential portion where the danger is the greatest runs from West Magnolia Lane, east along West Magnolia Avenue to Ramapo Avenue, south to the Susquehanna Railroad, west to Ecclestone Place, and north to West Magnolia Lane (See FIGURE 1) (1). This area has a very high water table, and is very close to the source of the radiation. The ground water here is contaminated with dangerous chemicals, heavy metals, and radioactive elements (2). During heavy rains the water level rises up to the foundations of homes. Some basements flood, but most residents have sump pumps which keeps the water from rising above the foundations. A few basements do not flood because they are water sealed, however, chemicals can still volatilize into these basements from the ground water. Puddling occurs in many yards when the water table rises, and remains from one to several days depending on the location and weather (3).

FIGURE 9 shows the relationships of portions of the Maywood site to the afflicted homes. The sites are Sears and vicinity properties, Stepan Company, the MISS, and the Susquehanna Railroad.

To see the radiation danger refer to FIGURES 7, 8, 10, 15, and 16. They show the high amount of radiation residents of West Central Avenue and Ecclestone Place were exposed to since 1950 - (when most of these homes were built). The radiation lines were drawn from the document, "An Aereological Survey of the Stepan Chemical Company and Surrounding Area. Maywood, New Jersey. Date of survey: 26 January 1981" (4). FIGURE 10 is a blow-up of one of the radiation profiles in the report. This survey was performed by the Energy Measurements Group (EE&G) for the United States Regulatory Commission in response to an accident on Rt. 17, involving radioactive material. The radiation detected is from thorium, uranium, and other radioactive materials buried in the soil on Stepan, MISS, and surrounding properties (5). It is not from the accident. These radioactive materials were present in the area since the late 1800's when the Maywood Thorium Works, later becoming Maywood Chemical Company, processed the radioactive materials to make gas lanterns (6). The figures also show the flood zone (7), and the high water table, which causes surface water run-off and puddling during heavy rains, in that area (8). One of the main aquifers supplying water to wells in the area is contaminated

with many chemicals and radiologics, some showing the same profile as the Stepan property wells. It is extremely possible that the entire ground water in the area is contaminated with radiologics and chemicals (9). Some of these dangerous and carcinogenic chemicals are benzene, trichloroethylene, trichloro-chloroethylene, 1,1,1-trichloroethylene, 1,2-dichloroethane, and 1,2-trans-dichloroethylene (10). The radiologics include thorium 232, uranium 238, and their "daughters" - radioactive elements and isotopes produced from thorium and uranium present in the area (11) (see FIGURES 12 and 13). There are other "unknown" chemicals present as well as dangerous levels of heavy metals such as mercury and lead (12). It is not known how long these chemicals existed. The flood zone and high ground water level, (see FIGURES 7 - 9 and 14 - 17), encompass the above mentioned properties and all of the homes in the cancer cluster study.

The majority of scientists agree that the majority of cancers are environmentally caused (13). The following facts are very important for understanding the seriousness of the problem:

A. Radioactive contamination:

1. When a radioactive element breaks down, the chief particles released are alpha particles, beta particles, and gamma rays. All three are referred to as radiation. Alpha particles are the largest, and deadliest, if you are comparing ONE alpha particle to ONE beta particle to ONE gamma ray. This is because the alpha particle is very large and very potent. Once it enters the body, it can irradiate much larger areas of the body with it's deadly potency. However, because of its large size, it usually cannot travel very far, and therefore, its victims, such as the workers at Stepan, have to be within very close range to the alpha particles for them to sustain any damage. Beta particles also move slowly, and are intermediate between alpha particles and gamma rays. On a ONE to ONE comparison, beta particles are the second deadliest. They travel faster than alpha particles, slower than gamma rays, rank second in size and potency, and can pass through some materials. Gamma rays are the least deadliest when compared on a ONE to ONE basis with alpha and beta particles. They are very small and travel extremely fast. Therefore, the chance of ONE gamma ray irradiating a cell in the human body is very unlikely.

The major problem, however, is gamma radiation, because of the large amount emitted from the Maywood site. To understand, say there is a man with a basketball on the Stepan site, a man with 10 softballs on the Stepan site, and a high-powered gun with 10 million needles in it on the Stepan site. The basketball man represents alpha radiation. The man with the softballs represents beta radiation. The high-powered gun with 10 million needles represents the gamma radiation. When the man with the basketball throws it, it does not travel very far, and is stopped by anything in it's way. If a person in the vicinity of the basketball inhaled it, the basketball would cause extreme damage to the lungs, or if ingested, extreme damage to the digestive organs. When the man with the softballs throws them, they travel further and are stopped by many things. If a person inhales or ingests the softballs, the lungs and digestive organs would be damaged, but not to the extent that the basketball causes. If the gun with 10 million needles in it goes off, the needles would travel great distances, pass through almost anything with great velocity, and hit many people with high concentrations of needles, and damage many organs because of their high number.

To sum it all up, alpha particles are dangerous only to people in close proximity to them. They are very potent, but cannot travel very far, and can't pass through most materials. Beta particles are dangerous to people fairly close to them. They are somewhat large and potent, but cannot travel very far. The concentrations of either is irrelevant, unless you are close to them, or if they are carried into residential areas by aerosols, wind, water, radon or thoron gas.

Gamma radiation, in high concentrations, is deadly because the rays can pass through almost anything (lead is one material they cannot pass through), and they travel at great speeds and for great distances. Because of these properties, high concentrations of gamma rays can easily irradiate many organs in the body, and can easily cause serious damage in many people. Referring to our analogy, one needle going through your body would not cause as much damage as 10,000 needles, which is just a small portion of the 10 million fired, going through your body.

When measuring radiation, it is the gamma rays that are measured. In all the figures showing radiation lines, they were all mapped out by machines that measure amounts and strengths of gamma rays.

2. The principal radioactive contaminants at the Maywood site are thorium-232, (Th-232), and uranium-238 (U-238). They produce many other radioactive elements and isotopes when they decay (14). The natural isotope, thorium-232, has a half-life of 14,000,000,000 years, which means it takes that many years for it to lose 1/2 of its radiation. It is the source of radon gas, which is also very toxic, highly radioactive, and has a very fast half-life. The uranium series produces radon-222, which is thoron gas. Thoron is almost as dangerous as radon. The natural isotope thorium-234 (Th-234) has a half-life of 24.1 days, also breaking down quickly. Thorium also produces other "daughters" such as radium-228, thorium-228, radium-224, polonium-216 (the element in cigarette tobacco believed to cause lung cancer) (15), and others. Refer to FIGURES 12 and 13.

3. The West Central Avenue/Ecclestone Place area is in a highly radioactive zone as shown in "An Aerial Radiologic Survey of the Stepan Chemical Company and surrounding area. Maywood, New Jersey. Date of survey: 26 January 1981"(16). As stated previously, the survey measures gamma radiation only. However, high gamma radiation also means high alpha and beta radiation. All residents in the area are being exposed to high levels of gamma radiation. Residents on the south side of West Central Avenue are also being exposed to alpha and beta radiation because the Susquehanna Railroad embankment is highly radioactive (17), and abuts all these properties (see FIGURES 15 and 16). It is very easy for these residents to contact alpha and beta particles. In reference (Z), (see references at back of report), it gives no distance between homes to the north of the Susquehanna Railroad, only for the homes to the west (18). Also, building 76, which is highly radioactive just to its east, and beneath it (19), and was a burial site for radioactive waste, and possibly other contaminants, is only several hundred feet away from homes on the south side of West Central Avenue, and is directly behind my home. (John Tamburro).

All of the radioactive elements present on parts of the Maywood site are

present in the afflicted area, and all have different ages, so at any one time, different amounts of radiation, some deadly, are being emitted. Just because these radioactive elements, thorium-232 and uranium-238, have a long half-life, does not by no means infer they are safe. Any particle of these radioactives could be 14,000,000,000 years old, (TH-232's half-life), or 4,500,000,000 years old, (U-238's half-life), and break down, producing daughter radioactives that could break down much faster, depending on the daughters produced. Also, processed radioactive materials break down quickly due to the by-products they produce, such as all of the daughter radioactive elements. When any radioactive material breaks down, it emits radiation in the form of alpha, beta, and gamma particles. The aerial radioactive survey shows that high amounts of radiation are in the area referenced by this report (20).

Thorium, uranium, and their daughters can cause internal irradiation, ionizing organs and tissue, (meaning they strip electrons from atoms in the human body, causing damage to organs and tissue which can lead to cancer, anemia, cataracts, genetic damage, and other afflictions (21)), via inhalation, ingestion, or direct contact with these radioactive elements. Gases and aerosols, (minute dust and water particles), from the site could contain alpha and beta particles. They can threaten the referenced area by being blown into the residential area, or carried in by high humidity or fog (22).

4. The levels of radiation emitted from Stepan property and the surrounding area were higher between 1950 and 1980, than it was when the radiologic survey was performed in 1981. However, the MISS site, added after the NRC study, increases the amount of radiation coming from that area now. Keep in mind the heavy areas of radiation emanate from Stepan property. Much of this is due to burial sites of radioactive waste (23). Neither of these radioactive areas have been cleaned up or stabilized (24).

7. The residents afflicted were exposed to somewhat higher doses of gamma, (and alpha and beta radiation as well, depending on how close to the source of radiation the residents were), between 1950 and 1980 than the amounts of radiation being detected in the NRC study because thorium, uranium and their related radioactive elements constantly decay (half-life). The radiation was higher in the 1950s than it is now. However, the radiation is greater than the amount of radiation detected in the NRC study because the MISS site was not present at the time of the study.

The material in the MISS came from properties in Lodi, Rochelle Park and Maywood and did not involve any soil from the Stepan/DOE properties (25). The radiation emitted from the MISS ranges from 5,000 counts per minute to 994,000 counts per minute on the surface. The DOE guide is 11,000 counts per minute. Subsurface measurements ranged from 2,000 counts per minute to 4,300,000 counts per minute. The DOE guide here is 40,000 counts per minute. Counts per minute measure gamma radiation (26) (see FIGURE 3). So, the MISS radiation is in addition to the radiation detected in the NRC study. The more radioactive materials added to the MISS, the higher the radiation emitted from the site will be.

6. As the amount of thorium, uranium, and other radioactive materials, heavy metals, and dangerous chemicals are increased, the danger increases. With radioactivity, more radioactive particles are emitted. This is why there is much opposition to storing radioactive materials at the MISS. The DOE put the site

in an area where residents already had a lot of exposure to radiation and carcinogenic chemicals (27). Now they are being exposed to that much more radiation from the MISS (28). The MISS now contains 35,000 cubic yards of mixed radioactive materials (29). At least another 250,000 plus cubic yards are to be added (30) putting all residents in that area in great danger.

7. All of the types of cancers contracted by the residents in the West Central Avenue/Ecclestone Place area can be caused by gamma radiation (31). Lung cancer was not detected, however, alpha radiation is primarily responsible for radiologically induced lung cancer (32). I should note that many people argued, "Well, none of the workers at Stepan developed cancer!" In "The Shopper", November 14th, 1990, there is an article entitled, "Attorney Urges Additional Study". David Tykalsker, an environmental and labor law specialist in Newark, won a case against Stepan for a widow who alleged that her husband died from lung cancer caused by ionizing radiation. A state judge ordered Stepan to compensate her for causing her husband's death. Mr. Tykalsker has two more clients suing Stepan for similar reasons. These men worked on Stepan property, were exposed to alpha radiation, developed lung cancer, and died. The victim in the first case, Mr. George Finley, did not smoke (33) (see FIGURE 11).

B. Carcinogenic and poisonous chemical and heavy metal contamination (see FIGURE 6):

1. Because many carcinogenic chemicals exist in the ground water, the surface water, and soils on the Maywood site portion in question, it is very likely residents are being exposed to these chemicals (34) (see FIGURES 6 and 17).

2. Carcinogenic chemicals can have detrimental effects on the body via ingestion, direct contact with contaminated water and soil, and inhalation of organic volatiles (benzene, tetrachloroethylene, etc...) trapped in basements, in sump pump tanks, and emanating from yards in residences in the high water table area (see FIGURES 6 and 17).

3. Chemicals can cause cancer by physically changing a normal cell into a cancerous cell. The action is chemical, not radiological. Ionization of cells does not occur with chemically induced cancer (35).

4. Poisonous chemicals and heavy metals poison the body. They may or may not cause cancer, but they still can kill. Lead poisoning, mercury poisoning, and arsenic poisoning are three examples. These metals have been found in large quantities on the Maywood site (36) (see FIGURES 6 and 16).

5. Most of the basements in the area get water, or contact the underground water, when the water table rises. Many have sump pumps, and the holes in which the pumps are placed contain the contaminated ground water. The chemicals evaporate and are trapped in the basements. Some homes have just a simple drain hole through which chemical evaporation into the basement occurs.

6. When the water table rises high enough, it creates small ponds in yards, which contain the chemicals, and floods some basements if the rain is heavy.

C. The same residents that are still being exposed to high levels of radiation are also being exposed to carcinogenic chemicals and dangerous heavy metals. It is only logical that the cancer rate in this area is almost double the normal for the state.

People exposed to carcinogenic chemicals, and low-level radiation in their younger years do not develop adverse health effects until their later years, depending on the strength of the carcinogen or radiation. Take note of the age span of the people that contracted cancer, when they were exposed, (paragraph D-1), and the age span when they contracted or discovered cancer (paragraph D-7) (37).

D. The study of the West Central Avenue area and its control group was done as follows:

I obtained cancer statistics from death certificates between 1978 and 1983, and the amount of cancer drops off moving away from the afflicted site (38). (See also FIGURES 2-1, 2-2, 2-3). I also obtained cancer information from the residents on West Central Avenue and Ecclestone Place directly, since I knew most of them all of my life. The statistics also show "hot spots" such as the south end of Maywood Avenue, near Essex Street and the side streets on the south end of town. It was found that out of 485 residents, 120 died from cancer, or had cancer as a secondary or tertiary disease when they died. Their names and addresses are listed in the report (FIGURES 2-1 and 2-2). 365 did not have any form of cancer when they died. 24.7% of the Maywood residents, excluding those on West Central Avenue and Ecclestone Place, developed cancer. This is very close to the cancer risk for all of Bergen County, 24.4%, which shows my statistics to be quite accurate. (Meaning I agree with the State Health Department's conclusion that Maywood/Saddle Brook/Lodi/Rochelle Park have about the same cancer risks as for the whole state of New Jersey - which, by the way, is the highest in the United States (39). On West Central Avenue and Ecclestone Place, west of Ramapo Avenue, south of West Magnolia Avenue, east of the PSE&G substation, which emits dangerous electromagnetic radiation, and north of the Susquehanna Railroad, there are 27 residences. Out of these 27, 11 were not included in this study because information could not be gathered on these homes, there was a rapid change-over of residents. Out of the remaining 16 homes, the following was taken into consideration:

1. A total of 36 residents lived in these homes for at least a 15 year span, and were between the ages of 20 and 40 when first moving in. (Children were not considered since they were all born at different times and are now relatively young, with longterm radiation effects not yet showing up, or just starting to. For example, my two sisters lived there from 1950 to 1970 and I from 1956 to present. Recently, all three of us began developing tumors and cysts, which could lead to cancer in the future. I also developed polycythemia vera, too many red blood cells, and still have this disorder, as well as a chemical imbalance causing depression (40).
2. None of these cancers were related to cigarette smoking (41).
3. All involved residents who lived in the area at least 15 years (42).

4. Some homes had several owners, and those residents living there more than 15 years have had incidences of cancer in their families (43).
5. The afflicted residents had safe jobs (with respects to exposure to carcinogens) and many were house wives who stayed at home (44).
6. Other radiologically induced afflictions such as anemia, cataracts, and shortened life span were not included, (though they existed in some of the residents). Neither were birth defects due to lack of that information (45).
7. Out of 36 residents, 17 developed cancer while living in the area. 11 died and 6 are in remission or cured. (The control group included secondary and tertiary cancers for this reason.) All were in their late 50's or early 60's when the cancer was detected and the ones that died were in the same age span, well below the average age of death - 75 years old.
8. Nine of the afflicted were housewives with non-hazardous or no occupations. They remained home most of the time. The men did not have any added cancer risks from their jobs (46).
9. All were healthy people until the cancer developed (47).
10. The residents in the afflicted area developed cancers that could be caused by contaminants in the air - aerosols carrying alpha and beta particles, wind-blown radioactive materials (48), gamma rays shooting through the air with little resistance, volatile organic chemicals floating in the air, by water - ingestion of home-grown fruits and vegetables which could contain irradiated water (49), direct contact with the contaminated water during heavy rains, chemicals trapped in basements due to the high water table and flooding of contaminated water, and by direct contact with soil containing contamination which can migrate via flooding and a high water table (50). Contaminants encompass all radioactive materials found on the Maywood site, semi-volatile and volatile organic chemicals, and the dangerous heavy metals.
11. It is known that the railroad embankment, bordering the homes on the south side of West Central Avenue, is highly radioactive. This is shown in the radiologic studies performed on my home, (see FIGURE 3), and other radiological studies performed around the Stepan and MISS site (51).
12. In the two skin cancer cases, both men, my father and my neighbor, worked outdoors in their back yards for long periods of time, but were not exposed to a lot of sun since the back yards are heavily shaded by large trees.
13. Pets also died from cancer (my dog was one of the victims - bone cancer - which is not inherent in Dalmatians).
15. Out of the 36 residents, 47% developed cancer. This is much higher than the 24.7% rate for the rest of Maywood.
16. The State Health Department did not study this group of people in southwestern Maywood (52).
17. In FIGURES 7 and 8, the red squares represent homes where residents developed

cancer, and they all fall within the higher radiation lines and within the area of the contaminated ground water. White homes in the figures, with zeroes, are homes where no cancer developed. All white homes are not included due to lack of information on them, or rapid change-overs of owners.

D. I should also note that the State Health Department also did a cancer study on Lodi, Saddle Brook, Maywood, and Rochelle Park. They did it on cancer incidences. HOWEVER, RECORDING OF CANCER INCIDENCES DID NOT START UNTIL AFTER MOST OF THE RESIDENTS IN THE WEST CENTRAL AVENUE AREA CONTRACTED, OR DIED, FROM CANCER. ALSO, THEY COMPARED ALL OF LODI, MAYWOOD, SADDLE BROOK, AND ROCHELLE PARK TO THE REST OF NEW JERSEY (THE STATE WITH THE HIGHEST CANCER RATE IN THE NATION) (53). THEY DID NOT GO DOOR TO DOOR, AS I DID, DID NOT ASK ANYONE IN SOUTHWESTERN MAYWOOD ABOUT CANCER, OR OTHER RADIOLOGICALLY INDUCED DISEASES AND DID NOT COMPARE THE WEST CENTRAL AVE./ECCLESTONE PLACE CANCER INCIDENCES TO THE REST OF MAYWOOD. FOR THIS REASON, THEIR STUDY DOES NOT PROVE MY STUDY TO BE INACCURATE. IT IS LIKE COMPARING APPLES TO ORANGES. THE STATE HEALTH DEPARTMENT DID NOT SURVEY SOUTHWESTERN MAYWOOD. THEY COMPARED MAYWOOD/LODI/SADDLE BROOK/ROCHELLE PARK TO THE REST OF NEW JERSEY. IF YOU SEE MY STATISTICS, I FOUND AN OVERALL CANCER INCIDENCE OF 24.7% FOR ALL OF MAYWOOD, (EXCLUDING EXTREME SOUTHWESTERN MAYWOOD), WHICH IS VERY CLOSE TO THE STATE HEALTH DEPARTMENT'S FIGURE OF 24.4% FOR ALL OF BERGEN COUNTY.

E. People raised a point that persons in Maywood that had thorium removed from their property did not develop any adverse health effects. Therefore, people on West Central Ave./Ecclestone Place should not have any adverse health effects. So, I included FIGURE 10 to show that the people on West Central Ave./Ecclestone Place were exposed to much greater amounts of radiation over the same time span as those residents in other parts of Maywood who had thorium tainted soil on, and removed from, their properties. The adverse health effects would be much greater for the residents of West Central Ave./Ecclestone Place, than for people in other parts of town.

EXPLANATION OF FIGURES

FIGURE 1: Shows southwestern Maywood, the portion of the Maywood site referred to in this report, and the area where the residents are in immediate danger.

FIGURE 2-1 & 2-2: Lists the residents of Maywood that died from cancer or had cancer when they died from other causes and excludes those on West Central Avenue and Ecclestone Place. 2-1 is sorted by street. 2-2 is sorted by location.

FIGURE 2-3: Lists residents of the West Central Avenue/Ecclestone Place zone that contracted, or died, from cancer.

FIGURE 3: Shows the results of gamma ray measurements taken on 142 West Central Avenue (my home) in December 1985.

FIGURE 4: Shows the results of soil gas testing performed on my property in November 1985.

FIGURE 5: Explains the dangers of radiation.

FIGURE 6: Lists some of the worst contaminants found on the Maywood site portion referred to in FIGURE 1.

FIGURE 7: Description of FIGURES where radiation lines are drawn and where the high water table is. Latter part is a map of the area.

FIGURE 8: Blow-up of figure 7.

FIGURE 9: Shows relationships of portions of Maywood site to the afflicted homes.

FIGURE 10: Blow-up of radiation contour map from the aereological survey - reference K.

FIGURE 11: Newspaper article about a non-smoker who died from lung cancer caused by radiation on Stepan Company property.

FIGURE 12: Decay chain for THORIUM-232.

FIGURE 13: Decay chain for URANIUM-238

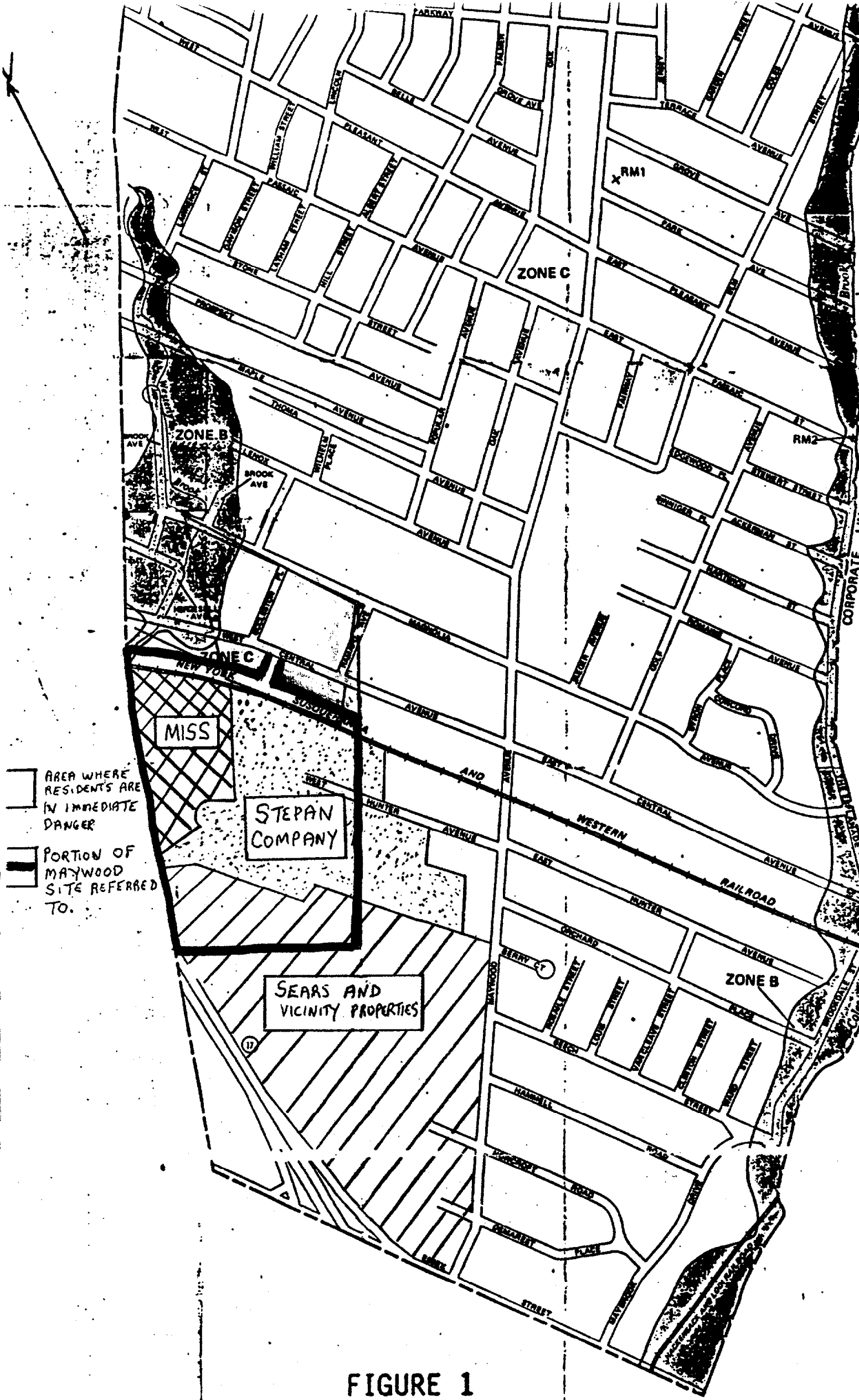
FIGURE 14: Topography, and other information, for last 3 homes on the south side of W. Central Ave. to use as examples for the residential danger zone.

FIGURE 15: Radiation profile of area from FIGURE 3 and reference (Z) - pp. 29-32.

FIGURE 16: Shows how chemical and heavy metal contamination can effect homes in the area.

FIGURE 17: Shows how radiation effects homes in the area.

FIGURE 18: DOE's radiation standard of 100 mrem/yr.





-  AREA WHERE RESIDENTS ARE IN IMMEDIATE DANGER
-  PORTION OF MAYWOOD SITE REFERRED TO.

FIGURE 1

Residents of Maywood, N.J. who died from cancer or had
cancer as a secondary or tertiary disease when they died.
Statistics are from 1978 to 1983. (Sorted by street)

<u>NAME</u>	<u>ADDRESS</u>	<u>CANCER</u>	<u>AGE AT DEATH</u>	<u>MAYWOOD LOCATION</u>
Frank Burns	?	Lung	74	?
Doreen Simpson	139 Ackerman	Bowel	72	SE
John Donlan	58 Beech	Breast	59	SW
Ralph Grain.	66 Beech	Colon	68	SW
Jean Druga	784 Briafcliff	Pancreas	72	NW
Joseph Chichin	738 Briafcliff	Brain	66	NW
Bernard Sulzen	729 Briarcliff	Lung	60	NW
Edward Neilly	173 Brookdale	Lung	71	SW
Josephine Laccia	200 Brookdale	Cancer	84	SW
Josephine Lacchia	200 Brookdale	Cancer	84	SW
LeRoz	315 Byron	Liver	68	SW
Jack Walsh	165 Clinton	Cancer	?	SW
Loiboi	177 Clinton	Metastasis	69	SW
Robert Hogan, Sr.	200 Cumming	Pancreas	55	NW
Bennie Lesker	43 Demarest	Lymphoma	87	SW
Dorthea Laslo	7 Demarest	Breast	62	SW
Louise Sullivan	48 Demarest	Lung	65	SW
Pasquale Mela	11 Demarest	Pancreas	63	SW
Ellen Bry	194 DeSoto	Metastasis	76	NW
J. Travelin	165 E. Central	Pancreas	66	SW
Joe Sutra	42 E. Central	Metastasis	76	SW
Joseph Travelin	165 E. Central	Pancreas	66	SW
M. Kling	74 E. Fairmont	Breast	48	NE
John Schiller	141 E. Farimont	Lung	72	NE
Beatrice Signa	150 E. Passaic	Mycoma	72	SE
Joseph Corio	150 E. Passaic	Prostate	73	SE
Braun	48 E. Pleasant	Lymph	85	SE
Clemente D'Amico	103 E. Pleasant	Liver	85	SE
H. Madden	100 E. Pleasant	Breast	78	SE
Henry Schmidt	51 E. Pleasant	Cancer	73	SE
Nina Pregler	122 E. Pleasant	Lymph	63	SE
Harry Robert	163 E. Spring Valley	Leukemia	84	NE
Angelina Palumbo	849 Edel	Cervix	56	NE
Ed Guenther	619 Edel	Pancreas	80	NE
Helen Eckel	858 Edel	Bladder	69	NE
M. Tagliahue	734 Edel	Cancer	56	NE
Richard Barther	649 Edel	Cancer	48	NE
Romania	680 Edel	Metastasis	63	NE
Ruth Owens	742 Edel	Lung	67	NE
William Frykberg	3 Elizabeth Ct.	Cancer	31	SE
Edna Trainor	588 Elm	Ovarian	?	SE
Anne Scranella	55 Essex	Duodenal	60	SW
Kafafian Zarouhy	21 Essex Ct.	Brain	84	SW
Joseph Jabolonski	159 Fairmount	Bladder	72	NE
Daniel McEvoy	481 Golf	Bowel/Thro.	71	SE
Wigglesworth	356 Golf	Stomach	74	SW
Mary Caruso	661 Grant	Breast	62	NE
Dorothy Mousin	59 Hammel	Breast	67	SW
Frank Ramsey	10 Hammel	Cancer	86	SW
Rose Speigel	122 Hammel	Metastasis	83	SW

FIGURE 2-1

Residents of Maywood, N.J. who died from cancer or had cancer as a secondary or tertiary disease when they died. Statistics are from 1978 to 1983. (Sorted by street)

<u>NAME</u>	<u>ADDRESS</u>	<u>CANCER</u>	<u>AGE AT DEATH</u>	<u>MAYWOOD LOCATION</u>
William Fischer	18 Hampton Ct.	Metastasis	75	SW
Doris Van Zant	138 Hartwich	Lung	61	SE
Walter Bund	74 Hartwich	Metastasis	72	SE
Dorothy McWalters	484 Hill	Breast	61	NW
Silvano Marini	458 Hill	Lung	40	NW
Albert Santella	54 Howcroft	Lung	60	SW
Dorothy Wehmann	326 Jaeger	Lung	63	SW
L. Dequintal	661 Jersey	Colon	70	NE
Oscar Garder	64 Lafayette	Bladder	75	NE
Sara Strenkert	137 Lafayette	Cancer	83	NE
Robert Hall	143 Lenox	Bladder	83	SW
Bergman	854 Lincoln	Lung	64	NE
Caroline Troeger	523 Lincoln	Breast	89	NW
George Boos	742 Lincoln	Brain	66	NE
Albert Francesco	129 Locust	Cancer	69	NE
Ellen Braun	? Loughlin Place	Cancer	54	?
Dunhan	40 Marlboro Ct.	Prostate	93	SW
Harold Miller	2 Marlboro Ct.	Bladder	82	SW
Orin Vogt	24 Marlboro Ct.	Liver	65	SW
Clara Smith	792 Maywood	Lung	78	NE
Jennie Porrino	847 Maywood	Liver	86	NE
Lillian Bazard	777 Maywood	Colon	81	NE
Michale Messina	728 Maywood	Lung	58	NE
Nunnaro	728 Maywood	Colon	84	NE
?	462 Oak	Cancer	?	NE
Albert Blum	465 Oak	Lung	63	NE
C. Queller	459 Oak	Pancreas	74	NE
Ernest Mock	650 Oak	Cancer	73	NE
Grace Ross	837 Oak	Breast	58	NE
Ingeborg Wells	605 Oak	Cancer	56	NE
Jennifer Criscone	816 Oak	Breast	78	NE
M. Zulling	475 Oak	Colon	81	NE
Aurthur Poehler	86 Orchard	Pancreas	76	SW
Kenneth Hertz	134 Orchard	Lung	?	SW
Mary Carl	44 Orchard	Uterine	94	SW
Robert Lynch	18 Orchard	Leukemia	29	SW
Vincenza Vivona	36 Orchard	Rectal	76	SW
Walter Krausse	71 Orchard	Metastasis	72	SW
Dora Guido	819 Palmer	Brain	64	NE
Dorothea Thomas	823 Palmer	Pancreas	66	NE
Thomas O'neil	614 Palmer	Kidney	60	NE
?	73 Park	Cancer	?	SE
Aurthur Merker	111 Parkway	Cancer	55	NW
Carolyn Gleason	209 Parkway	Leukemia	74	NE
Florence Heridge	100 Parkway	Pharynx	60	NW
Margaret Baresi	429 Poplar	Brain	57	SW
Olga Bronsky	160 Prospect	Ovarian	62	NW
Barbara Nickerson	224 Sanzari	Sarcoma	62	NE
Charles Ebhart	204 Sanzari	Lung	53	NE
James H. Roahe	215 Sanzari	Brain	50	NE

FIGURE 2-1

Residents of Maywood, N.J. who died from cancer or had
cancer as a secondary or tertiary disease when they died.
Statistics are from 1978 to 1983. (Sorted by street)

<u>NAME</u>	<u>ADDRESS</u>	<u>CANCER</u>	<u>AGE AT DEATH</u>	<u>MAYWOOD LOCATION</u>
Salvatore Iurato	942 Spring Valley Rd.	Lymphosarc.	66	NE
Charles Haedich	890 Spring Valley Rd.	Gall Blad.	69	NE
Mary Perkins	803 Spring Valley Rd.	Breast/Liv.	67	NE
Elizabeth Dicks	89 Stelling	Lung	67	NE
Robert Rudy	170 Stelling	Prostate	76	NE
William Weber	106 Stelling	Lung	84	NE
William Ostrander	116 Stewart	Cancer	77	SE
John Paglinco	214 Stone	Brain	73	NW
Nunzio Ciriello	206 Stone	Colon	64	NW
Alma Tyms	144 Thoma	Cancer	84	NW
Frances Baker	178 Van Cleve	Lung	64	SW
Bertha Palmara	39 W. Central	Breast	46	SE
Frank Lichtenberger	71 W. Magnolia	Prostate	75	SE
Paul O'Connel	24 W. Magnolia	Lung	49	SE
Helen McGrath	95 W. Passiac	Liver	83	NW
Fred Heini	65 W. Pleasant	Prostate	72	NE
Elizabeth Haycock	222 W. Spring Valley	Lung	59	NE
Diane D. Ferrer	42 W. Spring Valley	Brain	44	NE
Josephine Bruno	46 Woodland	Colon	54	NE
Anthony Scianimanico	632 Wyoming	Prostate	78	NE
Sarah Vitty	656 Wyoming	Pancreas	73	NE

FIGURE 2-1

Residents of Maywood, N.J. who died from cancer or had cancer as a secondary or tertiary disease when they died. Statistics are from 1978 to 1983. (Sorted by location)

<u>NAME</u>	<u>ADDRESS</u>	<u>CANCER</u>	<u>AGE AT DEATH</u>	<u>MAYWOOD LOCATION</u>
Frank Burns	?	Lung	74	?
Ellen Braun	? Loughlin Place	Cancer	54	?
M. Kling	74 E. Fairmont	Breast	48	NE
John Schiller	141 E. Farimont	Lung	72	NE
Harry Robert	163 E. Spring Valley	Leukemia	84	NE
Angelina Palumbo	849 Edel	Cervix	56	NE
Ed Guenther	619 Edel	Pancreas	80	NE
Helen Eckel	858 Edel	Bladder	69	NE
M. Tagliahue	734 Edel	Cancer	56	NE
Richard Barther	649 Edel	Cancer	48	NE
Romania	680 Edel	Metastasis	63	NE
Ruth Owens	742 Edel	Lung	67	NE
Joseph Jabolonski	159 Fairmount	Bladder	72	NE
Mary Caruso	661 Grant	Breast	62	NE
L. Dequintal	661 Jersey	Colon	70	NE
Oscar Garder	64 Lafayette	Bladder	75	NE
Sara Strenkert	137 Lafayette	Cancer	83	NE
Bergman	854 Lincoln	Lung	64	NE
George Boos	742 Lincoln	Brain	66	NE
Albert Francesco	129 Locust	Cancer	69	NE
Clara Smith	792 Maywood	Lung	78	NE
Jennie Porrino	847 Maywood	Liver	86	NE
Lillian Bazard	777 Maywood	Colon	81	NE
Michale Messina	728 Maywood	Lung	58	NE
Nunnaro	728 Maywood	Colon	84	NE
?	462 Oak	Cancer	?	NE
Albert Blum	465 Oak	Lung	63	NE
C. Queller	459 Oak	Pancreas	74	NE
Ernest Mock	650 Oak	Cancer	73	NE
Grace Ross	837 Oak	Breast	58	NE
Ingeborg Wells	605 Oak	Cancer	56	NE
Jennifer Criscone	816 Oak	Breast	78	NE
M. Zulling	475 Oak	Colon	81	NE
Dora Guido	819 Palmer	Brain	64	NE
Dorothea Thomas	823 Palmer	Pancreas	66	NE
Thomas O'neil	614 Palmer	Kidney	60	NE
Carolyn Gleason	209 Parkway	Leukemia	74	NE
Barbara Nickerson	224 Sanzari	Sarcoma	62	NE
Charles Ehart	204 Sanzari	Lung	53	NE
James H. Roahe	215 Sanzari	Brain	50	NE
Salvatore Iurato	942 Spring Valley	Lymphosarc.	66	NE
Charles Haedich	890 Spring Valley Rd.	Gall Blad.	69	NE
Mary Perkins	803 Spring Valley Rd.	Breast/Liv.	67	NE
Elizabeth Dicks	89 Stelling	Lung	67	NE
Robert Rudy	170 Stelling	Prostate	76	NE
William Weber	106 Stelling	Lung	84	NE
Fred Heini	65 W. Pleasant	Prostate	72	NE
Elizabeth Haycock	222 W. Spring Valley	Lung	59	NE
Diane D. Ferrer	42 West Spring Valley	Brain	44	NE
Josephine Bruno	46 Woodland	Colon	54	NE

FIGURE 2-2

Residents of Maywood, N.J. who died from cancer or had cancer as a secondary or tertiary disease when they died. Statistics are from 1978 to 1983. (Sorted by location)

<u>NAME</u>	<u>ADDRESS</u>	<u>CANCER</u>	<u>AGE AT DEATH</u>	<u>MAYWOOD LOCATION</u>
Anthony Scianimanico	632 Wyoming	Prostate	78	NE
Sarah Vitty	656 Wyoming	Pancreas	73	NE
Jean Druga	784 Briarcliff	Pancreas	72	NW
Joseph Chichin	738 Briarcliff	Brain	66	NW
Bernard Sulzen	729 Briarcliff	Lung	60	NW
Robert Hogan, Sr.	200 Cumming	Pancreas	55	NW
Ellen Bry	194 DeSoto	Metastasis	76	NW
Dorothy McWalters	484 Hill	Breast	61	NW
Silvano Marini	458 Hill	Lung	40	NW
Caroline Troeger	523 Lincoln	Breast	89	NW
Aurthur Merker	111 Parkway	Cancer	55	NW
Florence Heridge	100 Parkway	Pharynx	60	NW
Olga Bronsky	160 Prospect	Ovarian	62	NW
John Paglinco	214 Stone	Brain	73	NW
Nunzio Ciriello	206 Stone	Colon	64	NW
Alma Tys	144 Thoma	Cancer	84	NW
Helen McGrath	95 W. Passaic	Liver	83	NW
Doreen Simpson	139 Ackerman	Bowel	72	SE
Beatrice Signa	150 E. Passaic	Mycoma	72	SE
Joseph Corio	150 E. Passaic	Prostate	73	SE
Braun	48 E. Pleasant	Lymph	85	SE
Clemente D'Amico	103 E. Pleasant	Liver	85	SE
H. Madden	100 E. Pleasant	Breast	78	SE
Henry Schmidt	51 E. Pleasant	Cancer	73	SE
Nina Pregler	122 E. Pleasant	Lymph	63	SE
William Frykberg	3 Elizabeth Ct.	Cancer	31	SE
Edna Trainor	588 Elm	Ovarian	?	SE
Daniel McEvoy	481 Golf	Bowel/Thro.	71	SE
Doris Van Zant	138 Hartwich	Lung	61	SE
Walter Bund	74 Hartwich	Metastasis	72	SE
?	73 Park	Cancer	?	SE
William Ostrander	116 Stewart	Cancer	77	SE
Bertha Palmara	39 W. Central	Breast	46	SE
Frank Lichtenberger	71 W. Magnolia	Prostate	75	SE
Paul O'Connel	24 W. Magnolia	Lung	49	SE
John Donlan	58 Beech	Breast	59	SW
Ralph Grain	66 Beech	Colon	68	SW
Edward Neilly	173 Brookdale	Lung	71	SW
Josephine Laccia	200 Brookdale	Cancer	84	SW
Josephine Lacchia	200 Brookdale	Cancer	84	SW
LeRoz	315 Byron	Liver	68	SW
Jack Walsh	165 Clinton	Cancer	?	SW
Loiboi	177 Clinton	Metastasis	69	SW
Bennie Lesker	43 Demarest	Lymphoma	87	SW
Dorthea Laslo	7 Demarest	Breast	62	SW
Louise Sullivan	48 Demarest	Lung	65	SW
Pasquale Mela	11 Demarest	Pancreas	63	SW
J. Travelin	165 E. Central	Pancreas	66	SW
Joe Sutra	42 E. Central	Metastasis	76	SW
Joseph Travelin	165 E. Central	Pancreas	66	SW

FIGURE 2-2

Residents of Maywood, N.J. who died from cancer or had
cancer as a secondary or tertiary disease when they died.
Statistics are from 1978 to 1983. (Sorted by location)

<u>NAME</u>	<u>ADDRESS</u>	<u>CANCER</u>	<u>AGE AT DEATH</u>	<u>MAYWOOD LOCATION</u>
Anne Scranella	55 Essex	Duodenal	60	SW
Kafafian Zarouhy	21 Essex Ct.	Brain	84	SW
Wigglesworth	356 Golf	Stomach	74	SW
Dorothy Mousin	59 Hammel	Breast	67	SW
Frank Ramsey	10 Hammel	Cancer	86	SW
Rose Spiegel	122 Hammel	Metastasis	83	SW
William Fischer	18 Hampton Ct.	Metastasis	75	SW
Albert Santella	54 Howcroft	Lung	60	SW
Dorothy Wehmann	326 Jaeger	Lung	63	SW
Robert Hall	143 Lenox	Bladder	83	SW
Dunhan	40 Marlboro Ct.	Prostate	93	SW
Harold Miller	2 Marlboro Ct.	Bladder	82	SW
Orin Vogt	24 Marlboro Ct.	Liver	65	SW
Aurther Poehler	86 Orchard	Pancreas	76	SW
Kenneth Hertz	134 Orchard	Lung	?	SW
Mary Carl	44 Orchard	Uterine	94	SW
Robert Lynch	18 Orchard	Leukemia	29	SW
Vincenza Vivona	36 Orchard	Rectal	76	SW
Walter Krausse	71 Orchard	Metastasis	72	SW
Margaret Baresi	429 Poplar	Brain	57	SW
Frances Baker	178 Van Cleve	Lung	64	SW

FIGURE 2-2

Residents of West Central Ave. and Ecclestone Place
who had cancer or died from cancer. Statistics are from
1974 to 1983.

<u>NAME</u>	<u>ADDRESS</u>	<u>CANCER</u>	<u>AGE AT DEATH OR CANCER DETECTION</u>	<u>MAYWOOD LOCATION</u>
Clara Bertie	283 Ecclestone Place	Stomach	Early 60's	SW
Mr. Baird	280 ? Ecclestone Place	Throat	Mid 50's	SW
Mrs. Garranbone	290 Ecclestone Place	Bladder	Early 60's	SW
Mrs. Hansen	270 Ecclestone Place	Stomach	Late 60's	SW
Mrs. Krausse	287 Ecclestone Place	Brain	Late 50's	SW
Harold Dunn	146 W. Central Avenue	Bladder	Mid 50's	SW
Mr. Artegis	146 W. Central Avenue (previous owner)	Metastasis	Late 60's	SW
Florence Tamburro	142 W. Central Avenue	Ovarian	Early 60's	SW
John Tamburro	142 W. Central Avenue	Skin	Early 50's	SW
Mildred Kocher	136 W. Central Avenue	Colon	Early 60's	SW
Ralph Kocher	136 W. Central Avenue	Skin	Early 50's	SW
Mrs. Feltz	122 W. Central Avenue	Breast	Late 50's	SW
Mrs. Capaldo	137 W. Central Avenue (previous owner)	Breast	Late 40's	SW
Mrs. Busch	137 W. Central Avenue (previous owner)	Breast	Early 50's	SW
Mr. Bonnet	133 W. Central Avenue	Intestinal	Late 50's	SW
Mrs. G. Berman	130 W. Central Avenue	Breast	Late 50's	SW
Mr. G. Bertie	110 W. Central Avenue	Brain	Mid 60's	SW

FIGURE 2-3

JOHN TAMBURRO, 142 WEST CENTRAL AVENUE, MAYWOOD, NEW JERSEY 07607

Mr. Jay Davis, of Eberline Analytical Corporation, came to my house in December of 1985 to do gamma readings (radiation measurement). The outside readings exceeded the federal guide.

a). The federal guide to determine the maximum radiation any one person can be exposed to in one year, takes into consideration other sources of radiation, such as chest x-rays, dental x-rays, and natural radiation.

b). Anyone stepping out of my house gets exposed to radiation exceeding the federal guide. This is too hazardous.

I live in a valley, as opposed to Stepan and the MISS. The grading between my property and the MISS is the railroad embankment. In my section of West Central Avenue, the embankment rises about 8 feet. Half way up the embankment, the gamma readings climbed to almost 3 X the federal guide.

Also, the readings done by Mr. Davis indicated that the radiation levels were higher ABOVE my property (in-line with Stepan and the MISS), than at ground level (below Stepan and the MISS).

Also, as Mr. Davis moved closer to the pile with his monitor 8 feet above ground, the gamma readings increased.

My soil was tested for radionuclides by the state, and negligible amounts were found. This shows that the excess radiation is coming from the railroad embankment, the MISS, and Stepan property. The following is the result of the gamma testing:

	Microroentgens per hour.	Millirems per year	Body + med.
OUTSIDE 8' ABOVE GROUND	26	227.8	293.8
OUTSIDE GROUND LEVEL	20	175.2	241.2
OUTSIDE HALF-WAY UP RAILROAD EMBANKMENT	28	508.1	574.1
INSIDE	18	157.7	223.7
FEDERAL GUIDE	* 11.4	* 100.0	
MAYWOOD BACKGROUND	8.0	70.1	

NOTE: This testing was preliminary, and more tests were supposed to have been taken, but never were.

The third column includes the natural radioactive potassium in our bodies - 26 mrem/yr. plus the average medical component of 40 mrem/yr.

* At the time of the survey, the federal guide was 19.4 uR/hr. or 170 millirems/yr. The guide is now 11.4 uR/hr or 100.0 millirems/yr.

FIGURE 3

JOHN TAMBURRO
142 WEST CENTRAL AVENUE
MAYWOOD, N.J. 07607

My property was tested for chemical contamination in November 1985. This testing was soil-gas testing, to see if the soil was contaminated with carcinogenic chemicals. The ground water was NOT tested, only the soil.

Benzene, Stepan's most-used chemical today, and Ethyl Acetate were TENTATIVELY identified. Large amounts of several "UNKNOWNNS" were found also.

Their results:

"Two compounds TENTATIVELY identified: Benzene and Ethyl Acetate. Since organics were only found in low levels in the soil..." (this does not include the UNKNOWNNS found) "...it is unlikely" (But not positively) "that any human exposure is taking place." Note it says low levels IN THE SOIL. No one knows what is in the groundwater under my property - (about 2' under the yard and about 1' under my house, judging by the level of water in my sump pump tank).

The actual report follows this page.



State of New Jersey
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF WASTE MANAGEMENT
 HAZARDOUS SITE MITIGATION ADMINISTRATION
 CN 028, Trenton, N.J. 08625

MARWAN M. SADAT, P.E.
 DIRECTOR

JORGE H. BERKOWITZ, PH.D.
 ADMINISTRATOR

07 FEB 1986

Mr. John Tamburro
 142 W. Central Avenue
 Maywood, NJ 07607

Dear Mr. Tamburro:

Enclosed is the report on soil gas testing performed at your home on November 18, 1985. Please accept my apologies for the delay in sending the report to you; it appears that a clerical error resulted in me not receiving the report for over eight weeks.

As stated in the last line of the report, the inspectors found that the low levels of organics present do not represent a health threat. Further information on possible soil contamination in the vicinity will be developed during the Superfund investigations scheduled later this year.

Please call me at (609)984-2990 if you would like to discuss the report further.

~~XXXXXXXXXXXXXXXXXXXX~~

Very truly yours,

DA. Paley not working for
 David A. Paley P.E. D.E.P.T.
 Site Manager 12-1-86 -

HS80:jb:lm

Enclosure

cc: Dr. Jorge H. Berkowitz, HSMA
 Robert Predale, BSM
 Tom McNevin, BEERA

8/13/86 sending report. Mr. Ed Kaup Site manager -
 1-609-6338-1497

12-1-86 -
 No Report -

Hot Line -

FIGURE 4

MEMO

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO Dave Paley, Site Manager DATE NOV 20 1985

FROM Robert Kunze, Acting Assistant Chief, Site Evaluation Unit *RJK*

SUBJECT Work Request, 142 W. Central Ave., Maywood, NJ

On November 18, 1985 Al Pleva, Richard Gervasio and myself conducted a site visit at 142 W. Central Ave., Maywood, NJ. The purpose of this site visit was to evaluate soil gas at the above property.

Instrumentation:

The following monitoring equipment was used by the sampling team:

1. Organic vapor analyzer (Foxboro) - a portable gas chromatograph with a flame ionization detector.
2. HNU - portable photoionization detector equipped with a 10.2 probe.
3. Photovac portable gas chromatograph 10S50.

Procedures:

Using a slam bar and a brass tipped probe, a hole would be made from 2.5 feet - 4 feet below the surface. Upon pulling the probe from the hole, readings were taken using both the HNU and the OVA (survey mode). Areas of the yard showing positive results (see attached diagram) were then resampled using photovac portable GC. Calibration checks were run at the site using benzene.

Results (See attached Chromatographs):

1. Run #305: Shows the background readings of the air in the yard taken at 3-4 ft. above ground.
2. Run #299, #302 and #306: Are taken from soil gas at various points around the yard according to the procedure described above.

Notes:

1. Air temperature was dropping during the period of analysis so on many of the runs peak #11 was not identified as benzene see Run #299, #302 and #306. (the photovac does not have a heated column)
2. Calibration standard (qualitative only) of benzene was run at intervals to observe the increasing retention time due to the cold.

3. The quantitative standard of benzene was placed in the photovac memory on initial startup by photovac using a 10ppm standard for benzene. Therefore the quantitation for benzene, 2CE (Methylene Chloride) and n-hexane give only a rough estimate figure of actual concentration.

4. Other compounds in the photovac library are calibrated for relative retention time to benzene qualitative only. This is the reason for a result of 0.000ppm given in the report.

5. Some library abbreviations are as follows:

MEOH - Methanol
2CM - Methylene Chloride
1,1,2CE - 1,1,2 - Trichloroethane
1,2 CE4 - 1,2 - Dichloroethylene (cis and trans)
1,1,2,2 - 4CE4 - 1,1,2,2 - Tetrachloroethylene
MEK - Methyl Ethyl Ketone
C2H2 - Acetylene
Freon 12 - Dichlorodifluoromethane
MIBK - Methyl Isobutyl Ketone
Freon 22 - Monochlorodifluoromethane
11-CE4 - 1,1 - Dichloroethylene

6. The concentration estimates of .3ppm for benzene in run #306 is probably close. The OVA did not pickup benzene in the chromatographic mode. The OVA limit of detection is about 1ppm for direct injection of benzene.

Conclusions:

Photovac GC data indicates that low levels of organics appear to be migrating through the soil at 142 W. Central Ave., possibly volatilizing from groundwater.

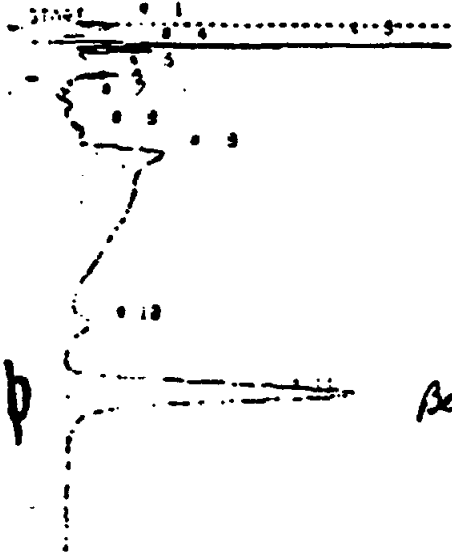
Two compounds tentatively identified: Benzene and Ethyl Acetate.

Since organics were only found in low levels in soil, it is unlikely that any human exposure is taking place.

cc: Dr. Jorge Berkowitz
Marja Van Ouwerkerk
Al Pleva
Stephen Borgianini

YAKO
RUN # 299

PHOTOVAC



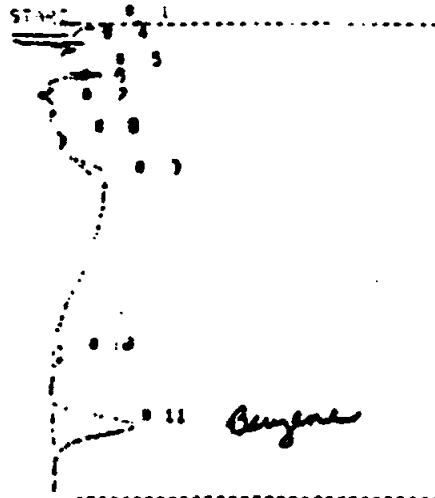
STOP # 055.5
SAMPLE RUN NOV 15 1983 0159
ANALYSIS # 299 ANALCOL SE-30
TEMPERATURE 12 PRECOL SE-30
GAIN 10 FLOW 11ml/min

OFFSET 29.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 20 mV/Sec
MINIMUM 5 Sec
MINIMUM AREA 50 mVSec
PLOTTER DELAY 10.0 Sec
ANALYSIS TIME 320.0 Sec
CYCLE TIME 0 min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	1.1	1.3 mV
UNKNOWN	2	21.1	7.2 mV
PROPANE	4	32.3	0.000 PPM
UNKNOWN	5	63.7	119.5 mV
UNKNOWN	6	87.3	147.7 mV
UNKNOWN	7	109.4	152.5 mV
209, 1100E, 100EY	8	133.7	0.000 PPM
UNKNOWN	9	153.3	2.7 mV
TRICLOROETHYLENE III	10	372.3	0.000 PPM
UNKNOWN	11	455.4	13.2 mV

RUN # 302

PHOTOVAC



STOP # 571.7
SAMPLE RUN NOV 15 1983 2142
ANALYSIS # 302 ANALCOL SE-30
TEMPERATURE 18 PRECOL SE-30
GAIN 50 FLOW 11ml/min

OFFSET 29.0 mV
CHART SPEED 0.5 cm/min
SLOPE SENS. 20 mV/Sec
MINIMUM 5 Sec
MINIMUM AREA 50 mVSec
PLOTTER DELAY 10.0 Sec
ANALYSIS TIME 320.0 Sec
CYCLE TIME 0 min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	1.1	1.3 mV
UNKNOWN	2	21.1	7.2 mV
UNKNOWN	3	25.3	215.1 mV
PROPANE	4	32.3	0.000 PPM
NEOPENTYLGLYCOL	5	63.7	0.000 PPM
UNKNOWN	6	87.3	147.7 mV
UNKNOWN	7	109.4	152.5 mV
209, 1100E, 100EY	8	133.7	0.000 PPM
1122-100EY	9	153.3	1.000 PPM
TRICLOROETHYLENE III	10	372.3	0.000 PPM
UNKNOWN	11	455.4	13.2 mV

FIGURE 4

PHOTOVAC

Calibrated Report #306

CALIBRATED PEAK 11, BENZENE, CCL4

SAMPLE RUN NOV 19 1985 0:46
 ANALYSIS # 305 ANALCEL 5E-30
 TEMPERATURE 8 PRECOL 5E-30
 GAIN 50 FLOW 1.00 L/M MIN

OFFSET 20.0 mV
 CHART SPEED 0.5 cm/min
 SLOPE SENS. 20 mV/Sec
 WINDOW 5 Sec
 MINIMUM AREA 50 mVSec
 PLOTTER DELAY 10.0 Sec
 ANALYSIS TIME 320.0 Sec
 CYCLE TIME 8 MIN

COMPOUND NAME	PEAK	R.T.	AREA-PPM
UNKNOWN	1	4.1	122.3 mV
UNKNOWN	2	21.1	127.0 mV
UNKNOWN	3	24.2	1.3 mV
UNKNOWN	4	33.0	302.2 mV
BUTANE	5	67.5	4.000 PPM
UNKNOWN	6	84.3	712.7 mV
UNKNOWN	7	103.0	174.4 mV
PROPYLENE	8	113.7	2.000 PPM
UNKNOWN	9	150.0	3.3 mV
ETHYL ACETATE	10	147.3	0.000 PPM
BENZENE, CCL4	11	341.4	0.000 PPM

List of CURRENT LIBRARY

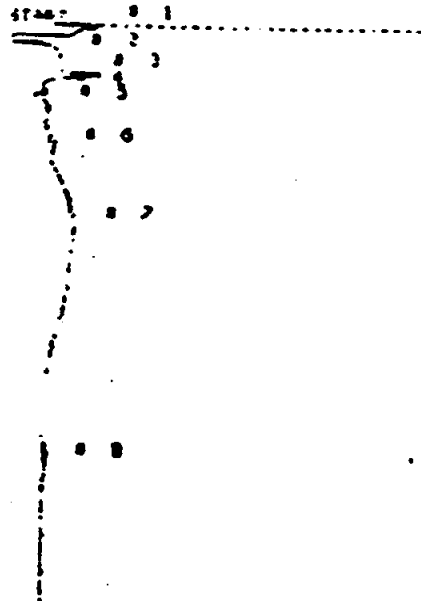
PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

2CM, 112CE, 12CLY	1	159.4	50.00 PPM
1-METHYLBENZENE, 11CEY	2	343.0	50.00 PPM
BENZENE, CCL4	3	341.4	10.00 PPM
TRICHLOROMETHANE III	4	462.0	0.000 PPM
1,1,2,2-TETRAFLUOROETHANE	5	219.3	0.000 PPM
TRICHLOROETHYLENE	6	253.4	0.000 PPM
TOLUENE	7	147.3	0.000 PPM
CHLOROFORM	8	376.3	0.000 PPM
ISOOCTANE	9	289.4	0.000 PPM
ETHYL ACETATE	10	147.3	0.000 PPM
TRICHLOROETHYLENE	11	174.5	0.000 PPM
1,1,1,2-TETRACHLOROETHANE	12	1259.2	0.000 PPM
FREON12, 2,2,2-TRIFLUOROETHANE	13	46.7	0.000 PPM
BUTANE	14	67.5	0.000 PPM
PROPANE	15	41.2	0.000 PPM
NEOPENTYL ISOBUTYLENE	16	71.3	0.000 PPM
CYCLOHEXANE	17	373.0	0.000 PPM
METHYLACRYLATE	18	416.3	0.000 PPM
METHYL METHACRYLATE	19	1003.3	0.000 PPM
ACETONE, ETHANOL	20	258.0	0.000 PPM
1-METHYLBENZENE	21	867.5	0.000 PPM
1-PENTANE	22	472.9	0.000 PPM
1-PENTANE NEOM	23	149.0	0.000 PPM
1,1,2,2-TETRACHLOROETHANE	24	316.4	0.000 PPM
1-PYLYPANOL	25	358.0	0.000 PPM

BKG AIR
 Run # 305

PHOTOVAC



STOP # 304.1
 SAMPLE RUN NOV 19 1985 0:51
 ANALYSIS # 305 ANALCEL 5E-30
 TEMPERATURE 8 PRECOL 5E-30
 GAIN 50 FLOW 1.00 L/M MIN

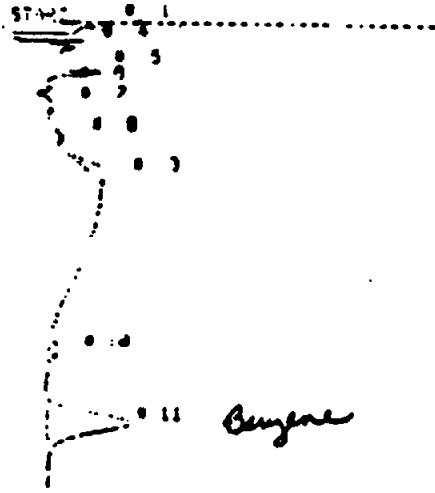
OFFSET 20.0 mV
 CHART SPEED 0.5 cm/min
 SLOPE SENS. 20 mV/Sec
 WINDOW 5 Sec
 MINIMUM AREA 50 mVSec
 PLOTTER DELAY 10.0 Sec
 ANALYSIS TIME 320.0 Sec
 CYCLE TIME 8 MIN

COMPOUND NAME	PEAK	R.T.	AREA-PPM
UNKNOWN	1	3.3	31.4 mV
BUTANE	2	38.1	0.000 PPM
NEOPENTYL ISOBUTYLENE	3	61.7	0.000 PPM
UNKNOWN	4	70.7	100.2 mV
UNKNOWN	6	150.3	91.0 mV
UNKNOWN	7	212.7	914.3 mV
TRICHLOROETHYLENE	8	250.3	0.000 PPM

FIGURE 4

Run # 302

PHOTOVAC



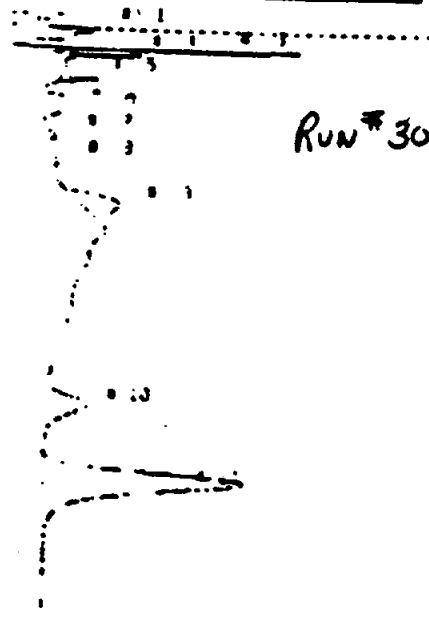
STEP # 521.7
 SAMPLE RUN NOV 15 1965 2142
 ANALYSIS # 302 ANALCOL SE-30
 TEMPERATURE 10 PRECOL SE-30
 GAIN 50 FLOW 11ML MIN

OFFSET 29.0 AU
 CHART SPEED 0.3 cm/min
 SLOPE SENS. 20 mv/sec
 WINDOW 5 Sec
 MINIMUM AREA 50 mVSec
 PLOTTER DELAY 10.0 Sec
 ANALYSIS TIME 320.0 Sec
 CYCLE TIME 0 min

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	4.3	120.0
UNKNOWN	2	20.7	102.3
UNKNOWN	3	25.2	210.3
PROPANE	4	32.3	2,000
PROP. ISOBUTYLENE	5	53.7	2,000
UNKNOWN	6	87.3	140.1
UNKNOWN	7	109.4	152.5
2CH. 1,1-DIETHYLENE	8	142.4	2,000
1,1,2-ICET	9	155.7	2,000
TRICHLOROETHYLENE III	10	187.5	2,000
UNKNOWN	11	192.3	1.0

Run at
Rear of Home

PHOTOVAC



Run # 306

STEP # 633.3
 SAMPLE RUN NOV 15 1965 0140
 ANALYSIS # 306 ANALCOL SE-30
 TEMPERATURE 5 PRECOL SE-30
 GAIN 50 FLOW 11ML MIN

OFFSET 29.0 AU
 CHART SPEED 0.3 cm/min
 SLOPE SENS. 20 mv/sec
 WINDOW 5 Sec
 MINIMUM AREA 50 mVSec
 PLOTTER DELAY 10.0 Sec
 ANALYSIS TIME 320.0 Sec
 CYCLE TIME 0 min

Uncalibrated Run

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	4.3	120.3
UNKNOWN	2	21.1	127.0
UNKNOWN	3	29.2	1.5
PROPANE	4	37.4	2,000
PROP. ISOBUTYLENE	5	57.3	2,000
UNKNOWN	6	87.3	140.1
UNKNOWN	7	109.4	152.5
2CH. 1,1-DIETHYLENE	8	142.7	2,000
1,1,2-ICET	9	155.3	2,000
TRICHLOROETHYLENE III	10	187.5	2,000
UNKNOWN	11	192.4	1.0

10 - Ethyl Acetate
 11 - Benzene

FIGURE 4

HOW RADIATION RELEASED FROM TH-232 AND U-238 DECAY CAN RESULT IN HEALTH PROBLEMS

X-rays and gamma rays are electromagnetic - properties similar to visible light, only they are much more penetrating.

Alpha and beta emissions are particulate - they are small particles.

All types of radiation lose energy by absorption when passing through matter. The process of absorption results in ionization - electrons are stripped from atoms of the absorbing material which comes in contact with the radiation. It is this process of ionization that produces damage in living tissue (cancer) and damage to chromosomes (birth defects in current and FUTURE generations), when the absorbing material is a human body.

Alpha particles, the most serious type of radiation once inside of the body CANNOT be detected on the external surfaces of the body (58). Beta radiation cannot be directly measured either. Only gamma rays are measurable with devices currently used in the nuclear field.

Alpha particles are heavy, slow moving, and expend their energy in a relatively short path. They have a high specific ionization - they ionize many more atoms along their path of penetration inside a living body. Alpha particles cannot easily penetrate a body, but if they got inside via inhalation or ingestion, they would come in contact with and damage many more cells because of their large size. Also, they would NOT exit the body since they haven't any force to push them out - therefore, they remain in the body until they break down, causing more damage (59). Externally, they travel only short distances, but there are other ways alpha particles can reach the population:

- 1). Radon and Thoron gases are alpha emitters. If these gases float from the site into residential areas they can emit alpha particles directly into the population.
- 2). Alpha particles can attach to aerosols (dust, water droplets) in the air and retain their energies and be carried by the aerosols into residential areas.
- 3). Contaminated soil particles carried from the site by wind, water, animals, or people can decay and release the alpha particles among the people (60).

Gamma rays have a low specific ionization - they ionize only a few atoms along their path of penetration through the body or other matter. However, they travel great distances and are extremely penetrating and many of them can ionize many atoms and produce severe tissue damage (61). They can enter the residential areas the same ways as alpha particles. But because they have such high energies they can also reach residents from their origin at the Maywood site - they can pass through rubber, trees, houses, and people with little loss of energy, and in large numbers, can ionize many cells.

Beta particles are intermediate between alpha particles and gamma rays, and can be just as damaging as alpha or gamma radiation (62).

Alpha particles primarily cause lung cancer through inhalation. But they can also be ingested through contaminated food, or other objects put in the mouth, and can cause cancers of the digestive tract or any other organ they contact.

FIGURE 5

Beta and gamma radiation primarily cause skin cancer, cancer in fatty tissues, cancer of the digestive tract, and of the urinary tract.

However, ANY type of cancer can occur depending on how the person was irradiated.

Critical organs, organs usually destroyed first by radiation, are the lungs, the organs of the gastrointestinal tract, muscle tissue, fatty tissue, the thyroid, kidneys and blood-forming organs (bone marrow).

The five principle damaging effects of ionizing radiation are (63):

- 1). Superficial injuries such as skin damage or erythema.
- 2). General effects on the body, particularly the blood-forming organs, and non-specific shortening of one's life span.
- 3). Induction of cancer.
- 4). Miscellaneous effects such as cataracts or impaired fertility.
- 5). Genetic effects (birth defects for many generations).

See FIGURE 12 for the thorium-232 decay chain and FIGURE 13 for the uranium decay chain.

THIS IS A LIST OF THE RADIOACTIVE ELEMENTS, SOME OF THE DANGEROUS CHEMICALS, AND EXCESSIVE DANGEROUS HEAVY METALS FOUND IN THE SOIL AND/OR SURFACE OR GROUND WATER IN THE PORTION OF THE MAYWOOD SITE SHOWN IN FIGURE 1. ASTERISKS DENOTE KNOWN CARCINOGENS.

DANGEROUS CHEMICALS

NITROBENZENE
PHENOL
POLYNUCLEAR AROMATICS
TETRACHLOROETHYLENE *
TOLUENE
TRANS 1,2-DICHLOROETHANE *
TRICHLORO BENZENE
TRICHLOROETHYLENE *
VINYL CHLORIDE *
XYLENE
2,4-DICHLOROPHENOL
CYCLOHEXENE
ACETONE
CHLOROFORM *
INDENO (1,2,3-ca) PYRENE *
BENZENE *
BENZO(a)ANTHRACENE *
BENZO(a)PYRENE *
BENZO(b)FLUORANTHENE *
BENZOIC ACID
BENZYL ALCOHOL
CHRYSENE *
METHYLENE CHLORIDE *
CHLOROBENZENE *

DANGEROUS HEAVY METALS

ANTIMONY
ARSENIC *
BARIUM
CADMIUM *
CHROMIUM *
COPPER
LEAD *
MERCURY
NICKEL *
SELENIUM *
SILVER
THALLIUM
ZINC

RADIOACTIVE ELEMENTS

ACTINIUM-228 *
PROTACTINIUM-234m *
RADIUM-226 *
RADIUM-228 *
THORIUM-230 *
THORIUM-232 *
THORIUM-234 *
URANIUM-234 *
URANIUM-238 *

FIGURE 6

REFER TO MAPS DESIGNATED FIGURES 7, 8, and 10 for AREAS B, C, D, E, and F

	Microroentgens per hour.	Millirems per year	C, D, E, and F were being exposed to in 1981. Numbers would be progressively higher dating back to 1950 when these residents first moved in, since thorium constantly decays. The numbers would also be progressively higher now than in 1981 because the MISS site was constructed in 1984 and this radiological study was performed in 1981. The average American receives about 130 mrems/yr from natural background sources.
B	7.5 - 11	65.7 - 96.4	
C	11.0 - 17.0	96.4 - 148.9	
D	17.0 - 25.0	148.9 - 219.0	
E	25.0 - 40.0	219.0 - 350.4	
F	40.0 - 70.0	350.4 - 613.2	

26 mrems/yr come from radioactive elements in the body, such as potassium. The other 104 mrems/yr come from external sources - about 60 mrems/yr from cosmic rays and 44 mrems/yr from natural background radiation.

We also get between 100 and 190 mrems/yr from man-made sources such as X-rays. The typical man-made dose is about 40 mrems/yr. (55). In the Maywood area, our background + cosmic radiation is from 53 mrems/yr to 66 mrems/yr. (56). Including the radioactive potassium in our bodies, 26 mrems/yr, and an average medical dose of 40 mrems/yr, most Maywoodians receive about 125 mrems/yr of normal radiation. The numbers in the chart above only include the cosmic ray/background radiation component. They do not include the 26 mrems/yr of radioactive potassium in our bodies, nor the medical component, 40 mrems/yr from radiopharmaceuticals and X-rays. If these figures are included, residents in the area of Stepan Company and the MISS site, actually receive higher amounts of radiation as shown in the table below.

	Millirems per year.
B	131.7 - 162.4
C	162.4 - 214.9
D	214.9 - 285.0
E	285.0 - 416.4
F	416.4 - 679.2

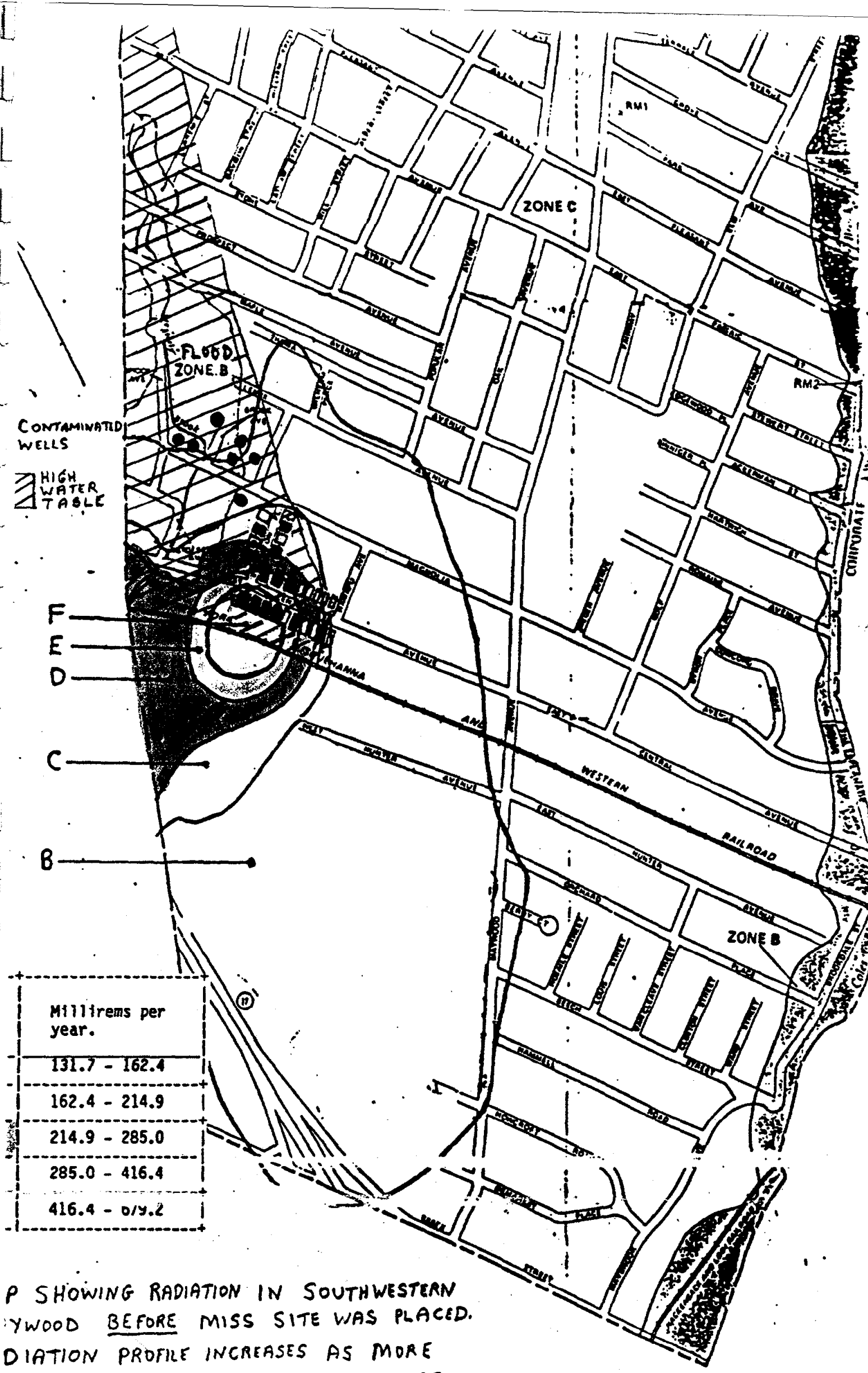
The radiation protection standard, set by the DOE, that any one person should be exposed to during any year is 100 millirems per year. (see FIGURE 18.) However, there is no real radiation level below which biological damage will not occur (57).

The cross-hatch lines in FIGURES 7, 8, and 9 show the flood zone and the high water table where wate comes up from the ground into basements, or in yards, during heavy rains. This is the same water beneath the portion of the Maywood site referred to in this report.

Residents living near Stepan were exposed to far greater amounts of radiation because of the thorium, uranium and other radioactive elements present all over the Maywood site.

In FIGURES 7 and 8 the red squares represent homes where residents developed cancer, and they all fall within the higher radiation lines and within the area of contaminated ground water. White homes in the figures, with zeroes, are homes where no cancer developed. All white homes are not included due to lack of information on them, or rapid change-overs of owners.

FIGURE 7



CONTAMINATED WELLS

HIGH WATER TABLE

T
F
E
D
C
B


Millirems per year.
131.7 - 162.4
162.4 - 214.9
214.9 - 285.0
285.0 - 416.4
416.4 - 519.2

P SHOWING RADIATION IN SOUTHWESTERN WOODROW BEFORE MISS SITE WAS PLACED. RADIATION PROFILE INCREASES AS MORE RADIOACTIVE MATERIAL IS ADDED TO MISS. THIS SHOWS CONTAMINATED (CHEMICAL) GROUND WATER.

FIGURE 7

BLOW-UP OF EXTREME SOUTHWESTERN MAYWOOD
 SHOWING RADIATION PROFILE, CONTAMINATED
 GROUND WATER AND WELLS, HOMES WHERE
 CANCER-STRUCK (NUMBERS IN HOMES SHOW
 HOW MANY PEOPLE IN HOME CONTRACTED
 CANCER, HOMES WHERE NO CANCER STRUCK -
 WHITE HOMES WITH ZEROS IN THEM, AND
 HOMES NOT USED IN SURVEY DUE TO LACK OF
 INFORMATION - ALL WHITE, NO NUMBERS.

HIGH WATER
 TABLE

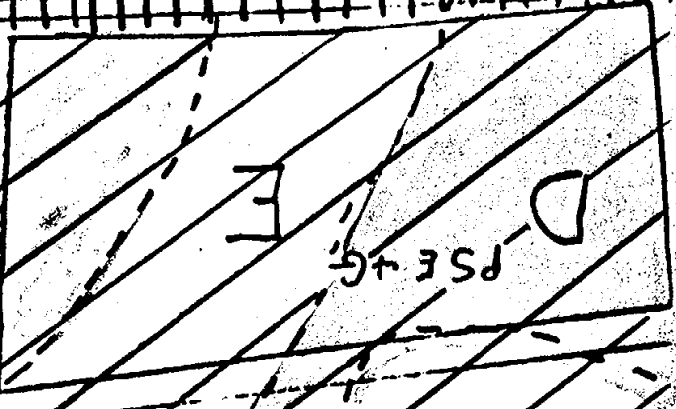
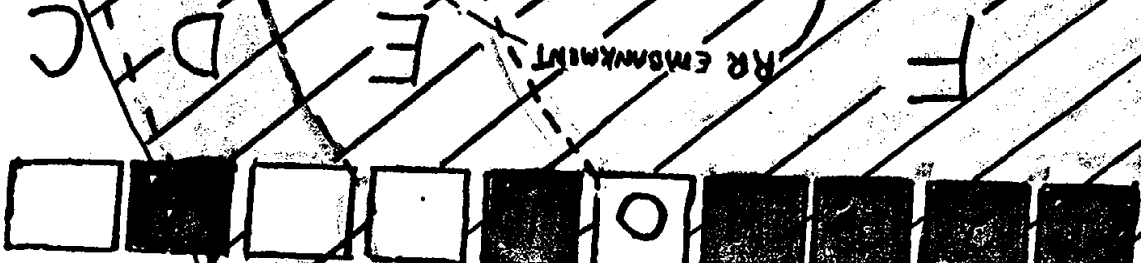


RRMPO AVE.

W-MAGNOLIA AVE.

ECCLISTON'S PLACE

W-CENTRAL AVE.



THREE OF THE CONTAMINATED WELLS

E

W

N

S

MISS

IR 8' ELEVATION

SUSQUEHANNA R.R.

RR EMBANKMENT

FIGURE 2

C

D

E

F

E

D

C

D

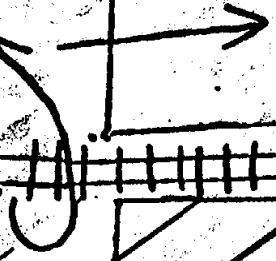
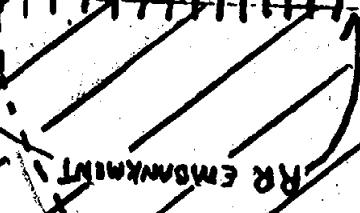
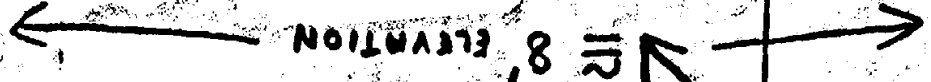
C

W

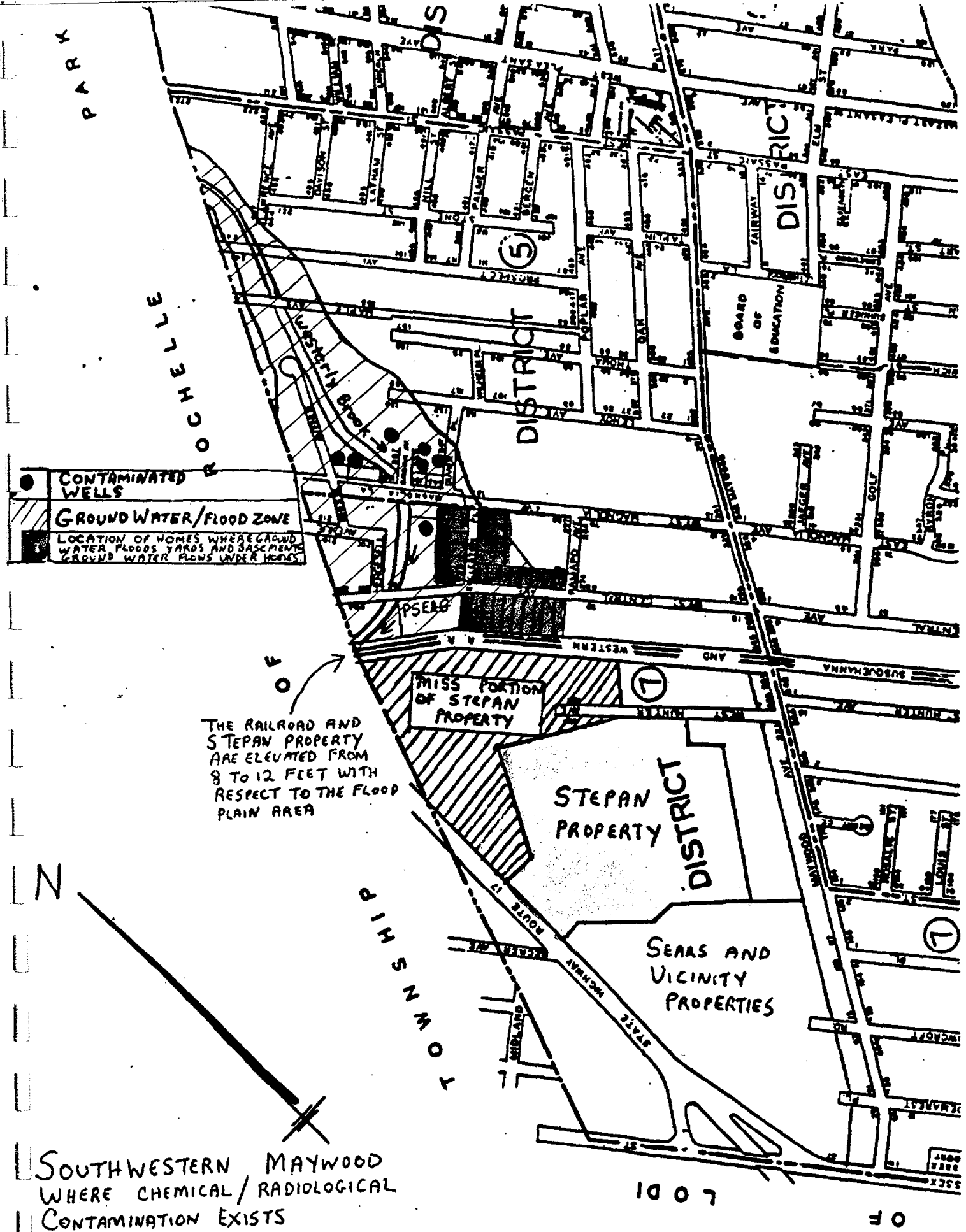
N

E

S

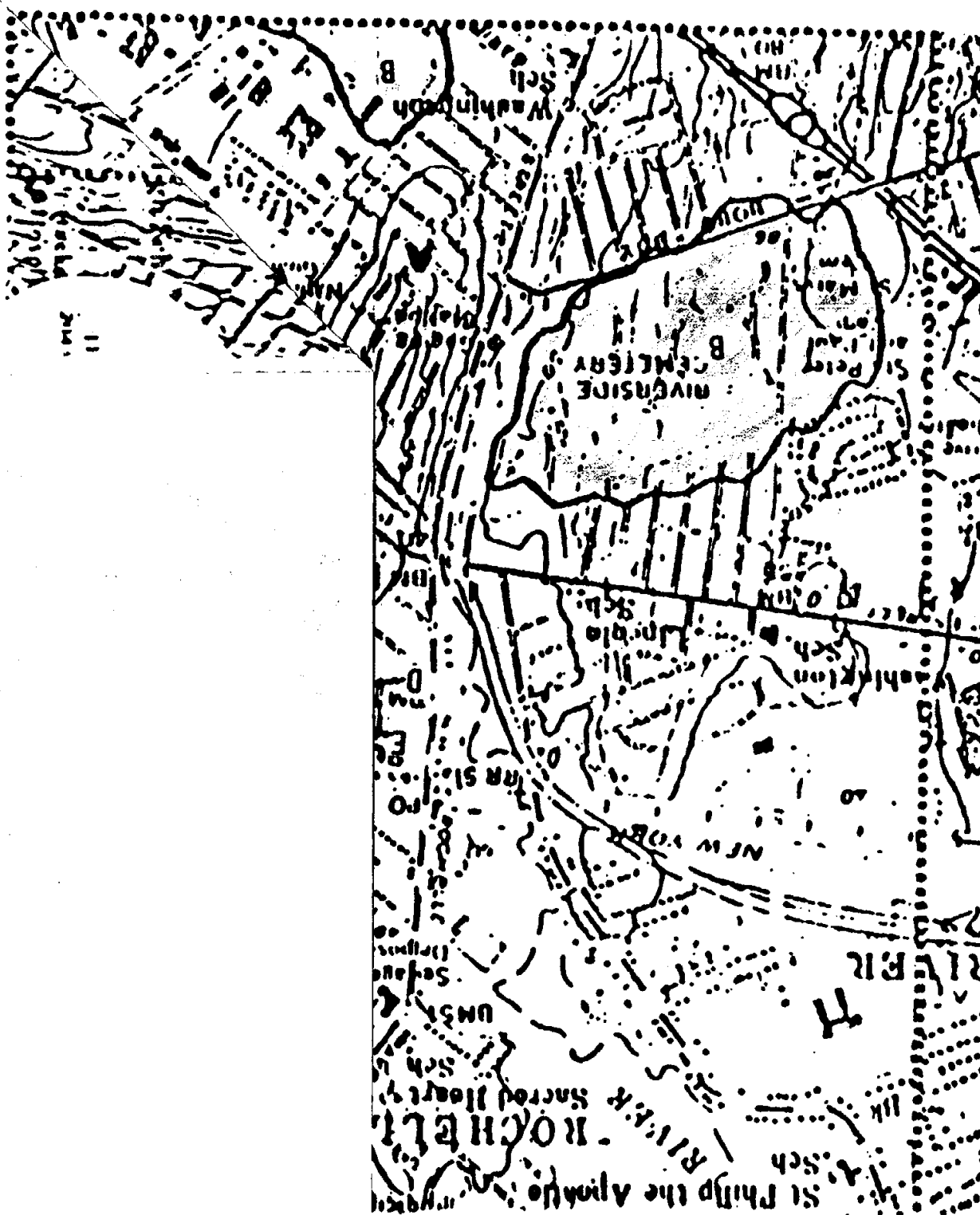


DUV
 RRA



SOUTHWESTERN MAYWOOD
 WHERE CHEMICAL/RADIOLOGICAL
 CONTAMINATION EXISTS

FIGURE 9



Letter	Gamma Exposure Rate at 1 m level (μR/h)	Mitrisms per Year
F	40.0 - 70.0	350.4 - 613.2
E	25.0 - 40.0	219.0 - 350.4
	17.0 - 25.0	148.9 - 219.0
C	11.0 - 17.0	96.4 - 148.9
B	7.5 - 11	65.7 - 96.4

CONVERSION SCALE



11

Attorney urges additional study

by Chris Neidenberg

MAYWOOD — While a federal agency asks for calm, a lawyer who has handled three legal actions against Stepan Chemical Company over contamination is urging a further area study for possible health risks.

David Tykulsker, an environmental and labor law specialist in Newark, successfully represented the widow of a worker who died of lung cancer. Tykulsker's client alleged on-site ionizing radiation contributed to the death of George Finley. He handled radioactive materials. A state judge ordered Stepan to compensate her for causing his death.

Tykulsker said two weeks ago he has already filed papers representing another client for similar reasons, and plans to file court papers for a third client also

upset with Stepan.

Officials with the U.S. government's Agency For Toxic Substances and Disease Registry (ATSDR) plan to meet in the agency's Atlanta office tomorrow (Nov. 15) to consider doing further "health effects studies" on area residents, as recommended in a federally-funded state report. Gregory Ulirsch, ATSDR New Jersey technical officer, said Atlanta officials will link via phone with a state health department official to review data. Ulirsch predicted a final decision will come in about week or two.

Louise Fabinski, an ATSDR spokeswoman, stressed three weeks ago that the state's preliminary findings will not definitely trigger a further study. ATSDR will first seek input from state, federal and local health agencies, including the

U.S. Environmental Protection Agency and state Department of Environmental Protection.

"This site is being considered (for further study) along with a number nationally. But it doesn't mean we expect people to have health problems," Fabinski said.

Fabinski added ATSDR might conclude there is not enough available scientific data for a fact-based study. Some factors which must be considered, Fabinski said, are the time over which residents have been exposed, the types of pollutants they have been exposed to, and whether the body stores the chemicals at issue so health effects can be studied. She explained using cancer deaths to conclude there are health risks depends on the specific cancers occurring in a polluted area.

Tykulsker, however, contended the U.S. government

already has ample data to do a further Maywood probe, and to periodically check residents for health problems.

"Does Maywood have a problem meriting further study?" he asked rhetorically. "I say yeah and I'll go even further. I really think there's this bizarre idea that you need dead bodies to study. When will this (thinking) stop?"

"We know carcinogenic chemicals and ionizing radiation have existed on this site," Tykulsker continued. "We know the site has been handled in a less than exemplary manner, that ionizing radiation knows no boundaries and has killed at least one worker (Finley).

"To say there's no reasonable chance that area residents have also been exposed puts hope above logic," he said. "The alarm — if any — is not undue."

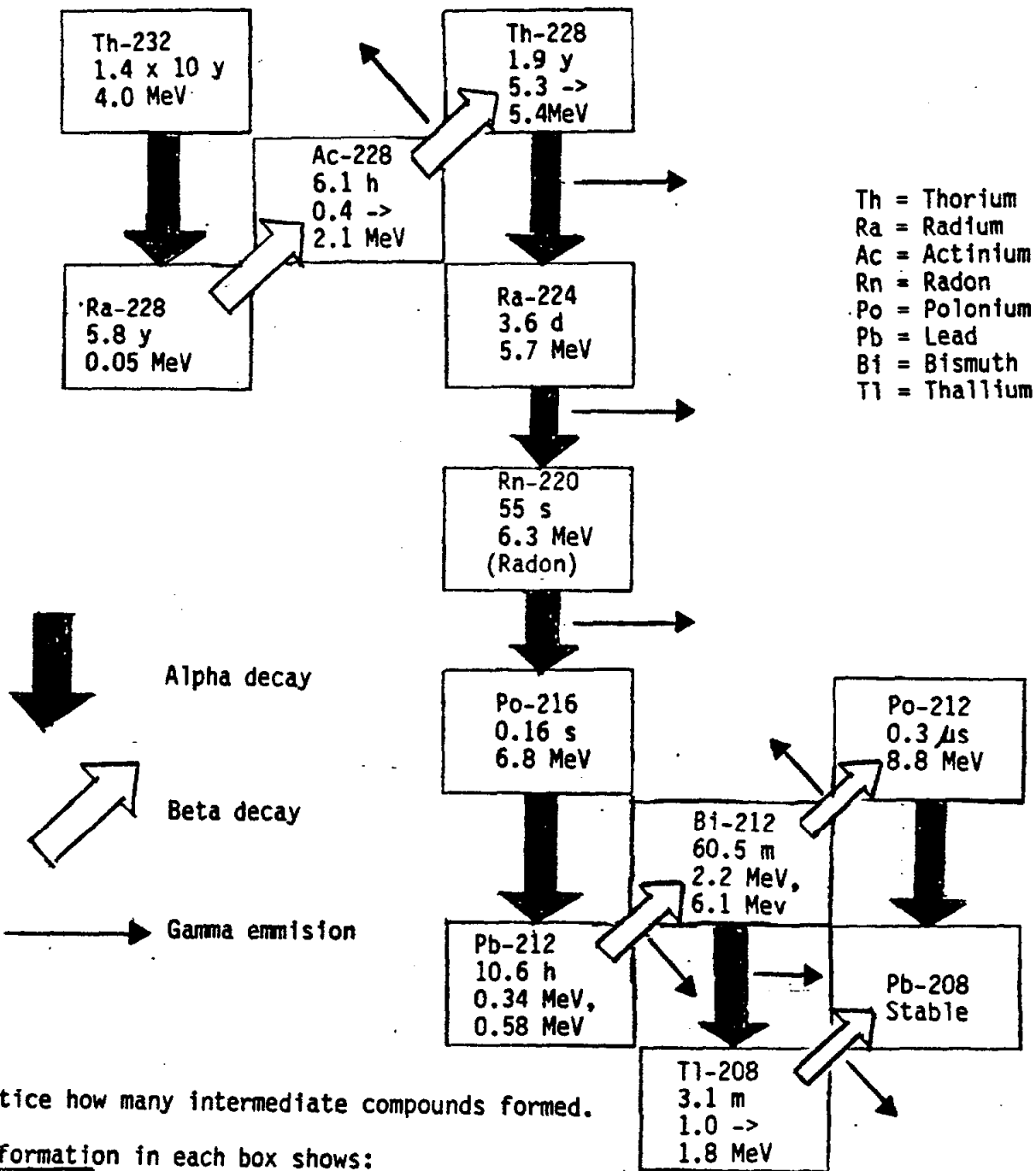
The lawyer, who cited the presence of the carcinogen benzene on the Maywood Superfund site, insisted the U.S. government can do more to help residents. He agreed with Fabinski that to do a cancer study, one must link "specific exposures to specific types of cancer."

"That's why I'm upset with the notion that you need dead bodies before studying," Tykulsker complained.

Tykulsker said the federal government should also "closely monitor the health status" of residents, citing lung cancer (which killed non-smoker Finley) as an example.

"Lung cancer is fatal unless it's caught real early," he explained. "The only way you can is to look for it on a consistent basis."

PRINCIPAL DECAY CHAIN OF THE THORIUM-232 SERIES



Notice how many intermediate compounds formed.

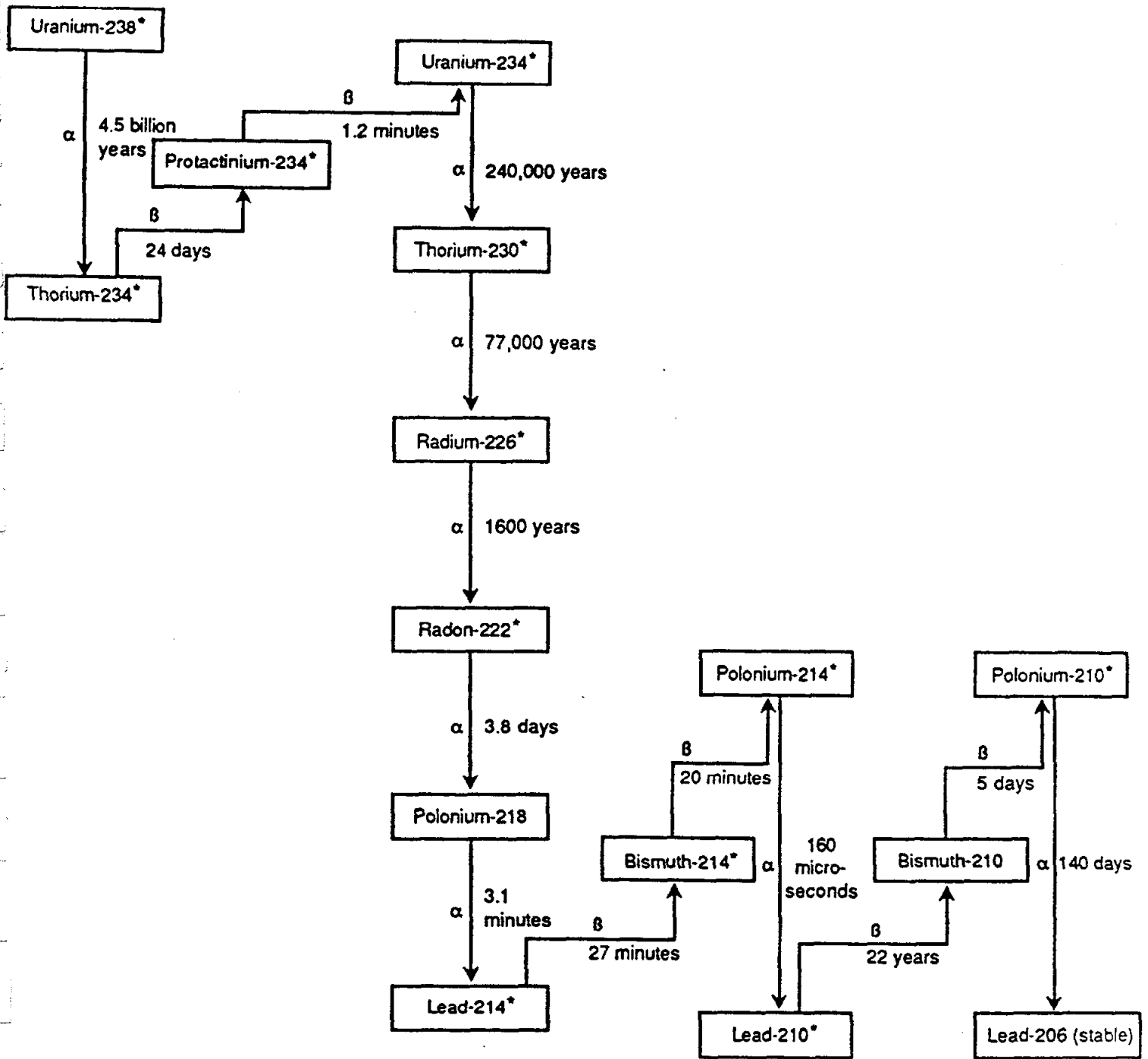
Information in each box shows:

- Th-220 -> The element formed. This one is Radon-220
- 55s -> The time it takes for the element to decay. This one is 55 seconds.
- 6.3 MeV -> The energy released during decay. 6.3 megavolts in this case.

y = years d = days h = hours m = minutes s = seconds μs = microseconds

Gamma emission - a secondary process following rapidly after alpha or beta decays. Gamma rays have no mass or charge, but are the most penetrating of the three. Gamma emissions occur throughout thorium decay.

FIGURE 12



NOTES:
 Only the dominant decay mode is shown.
 The times shown are half-lives.
 The symbols α and β indicate alpha and beta decay.
 An asterisk indicates that the isotope is also a gamma emitter.

FIGURE 17 Uranium-238 Radioactive Decay Series

FIGURE 13

FIGURE 14

WEST CENTRAL AVENUE (SOUTH SIDE)

FLOODING OCCURS

WATER TABLE RISES UP TO, AND IN SOME CASES, INTO BASEMENTS. SUMP PUMP WATER IN THEM.

(ELECTROMAGNETIC RADIATION)

PSE & G

146

142

136

BASEMENT

BASEMENT

BASEMENT

OCCURS

FLOODING

GULLY TO WESTERLY BROOK WHICH BACKS UP IN HEAVY RAIN

CONTAMINATED RAILROAD EMBANKMENT

SUSQUEHANNA RAILROAD

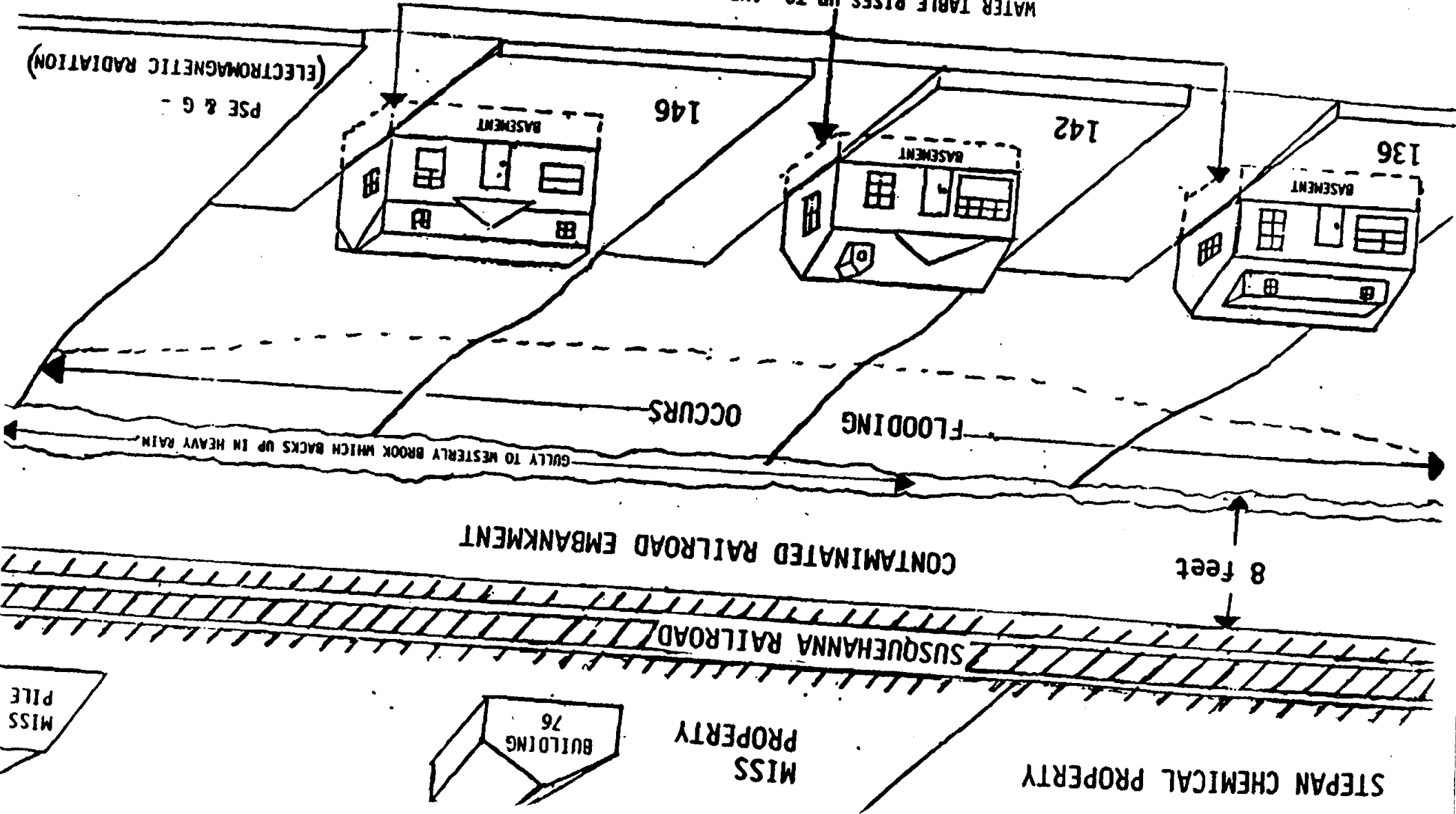
8 feet

BUILDING 76

MISS PROPERTY

STEPAN CHEMICAL PROPERTY

MISS PILE



TOP NUMBER IS 15 1/4 H/4
100 M B 5 M 1/4 H

FIGURE 15

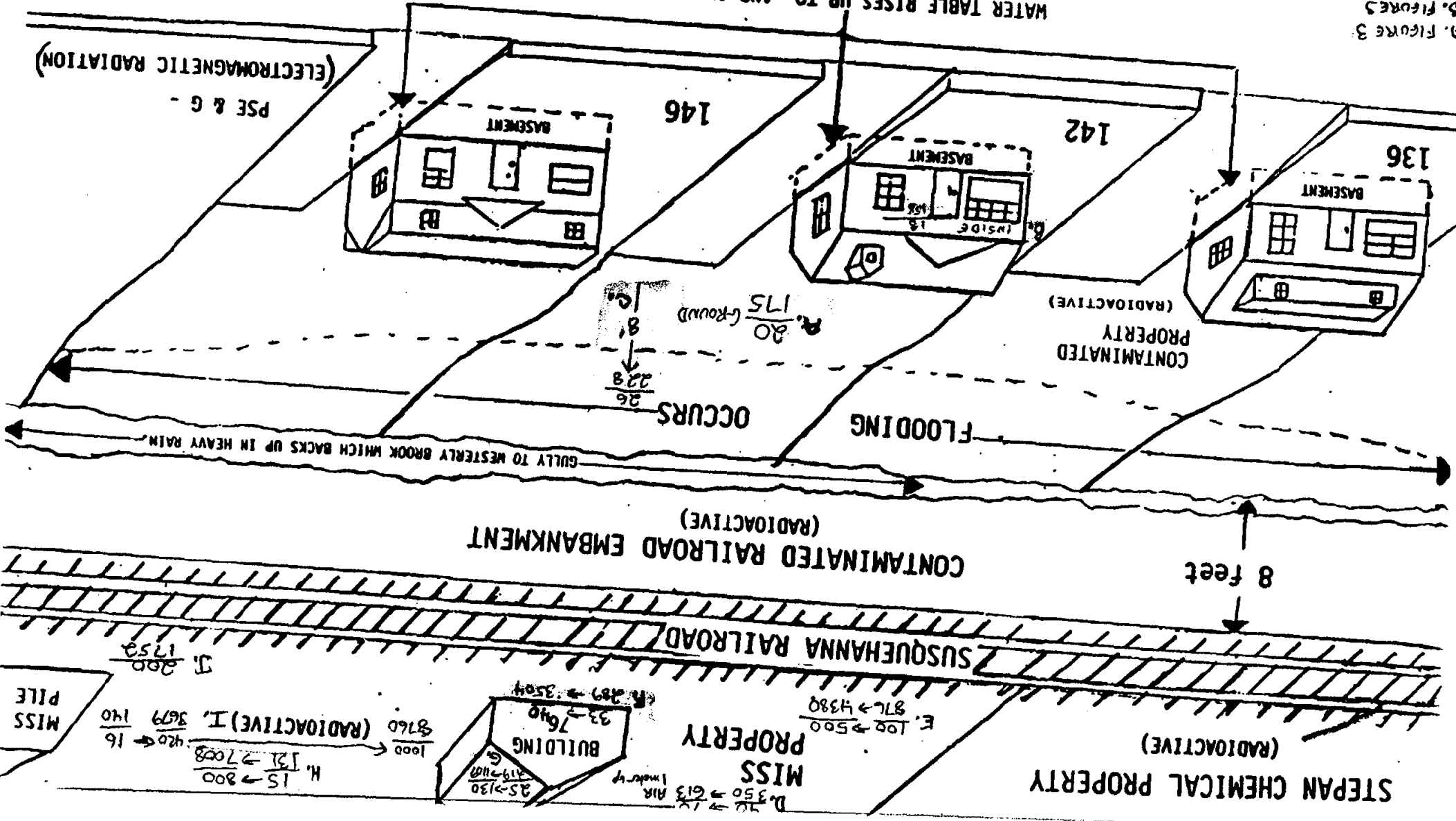
WEST CENTRAL AVENUE (SOUTH SIDE)

FLOODING OCCURS

- A. FIGURE 3
- B. FIGURES
- C. FIGURES
- D. Z, 19.30 general measurement
- E. LAWN AREA AROUND BEING 76 Z, 19.30
- F. REMINDER OF BEING 76
- G. INSIDE 76
- H. VARIOUS REMAINS AROUND MISS
- I. FIRST FROM RT 17 TO A WARE HOUSE
- J. NORTHERN FENCE BOUNDARY OF MISS

WATER TABLE RISES UP TO, AND IN SOME CASES, INTO BASEMENTS. SUMP PUMP WATER IN THEM.

MEASUREMENTS D → J CAN ALL BE FOUND IN WORK PLAN FOR THE R/FS - ENVIRONMENTAL IMPACT STATEMENT, MAYWOOD N.O. # 89.29932.



MISS PILE

H. 15 → 800
I. 131 → 7008
J. 200 → 1752

MISS BUILDING (RADIOACTIVE) I. 3679 140 → 16
8760

MISS PROPERTY

MISS BUILDING

25 → 130
419 → 110
33 → 7640
33 → 3504

D. 350 → 613 AIR

E. 102 → 500
876 → 4380

STEPAN CHEMICAL PROPERTY (RADIOACTIVE)

CONTAMINATED RAILROAD EMBANKMENT (RADIOACTIVE)

8 feet

OCCURS

FLOODING

CONTAMINATED PROPERTY (RADIOACTIVE)

136

142

146

PSE & G -

(ELECTROMAGNETIC RADIATION)

STEPAN CHEMICAL PROPERTY

MISS PROPERTY



CHEMICAL CONTAMINATION



CHEMICAL CONTAMINATION

SUSQUEHANNA RAILROAD

8 feet

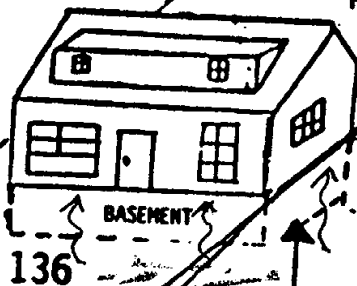
CONTAMINATED RAILROAD EMBANKMENT
CHEMICAL CONTAMINATION

GULLY TO WESTERLY BROOK WHICH BACKS UP IN HEAVY RAIN

FLOODING OCCURS

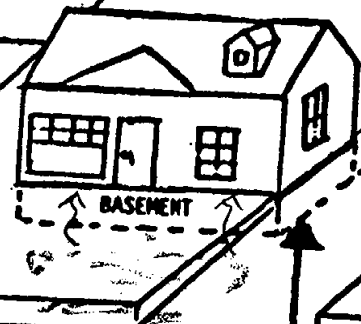
CHEMICAL CONTAMINATION

CONTAMINATED PROPERTY
(RADIOACTIVE)

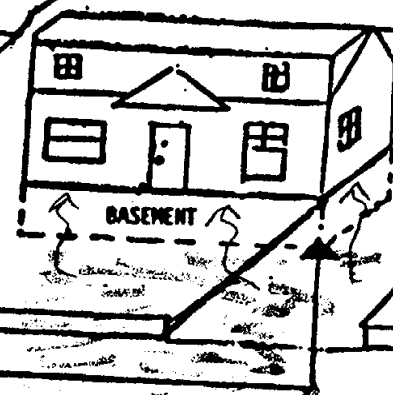


136

142



146



PSE & G -
(ELECTROMAGNETIC RADIATION)

CHEMICAL CONTAMINATION

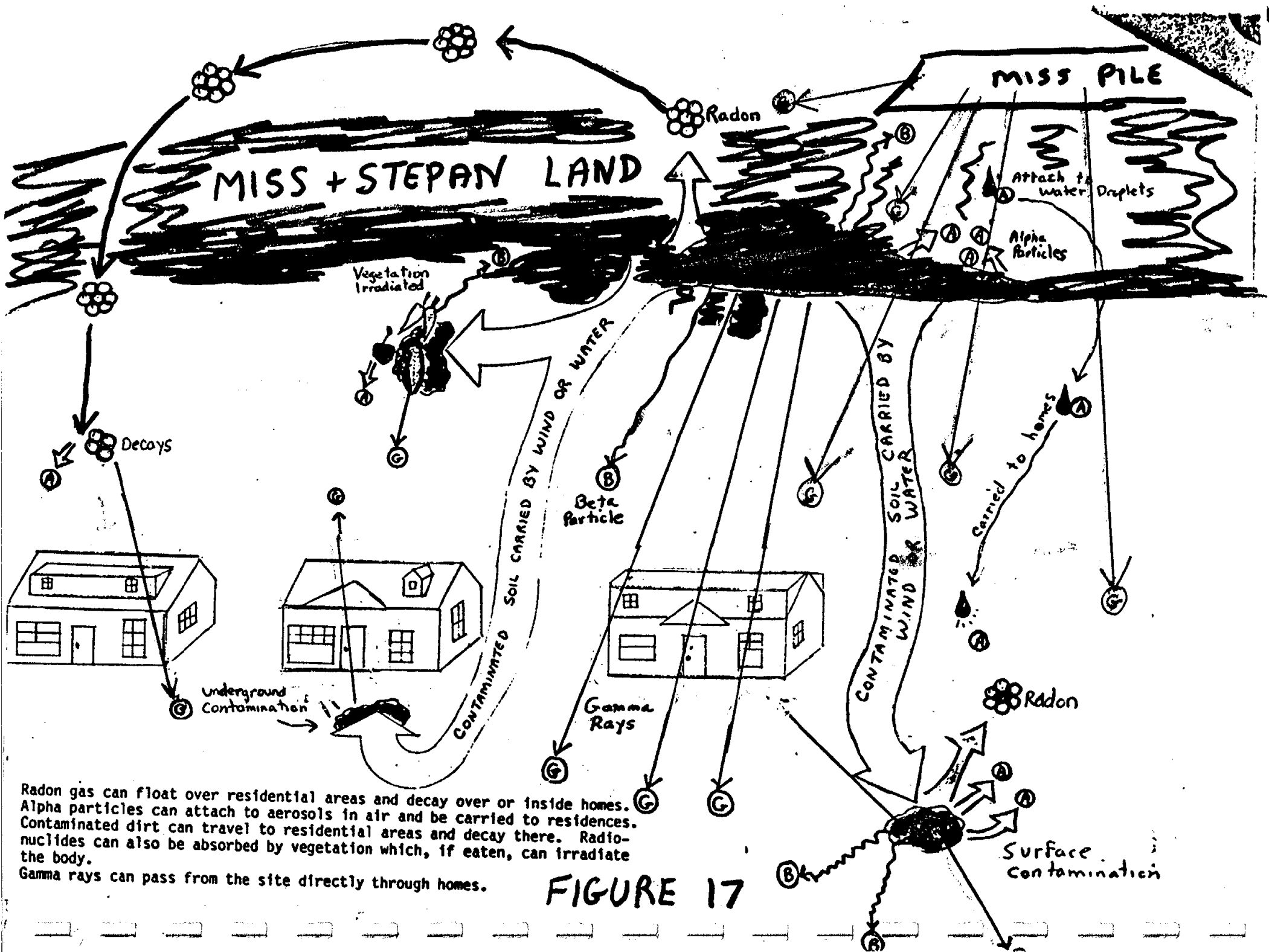
WATER TABLE RISES UP TO, AND IN SOME CASES, INTO BASEMENTS. SUMP PUMP TANKS IN BASEMENTS ALMOST ALWAYS HAVE WATER IN THEM.

CHEMICAL CONTAMINATION

WEST CENTRAL AVENUE (SOUTH SIDE)

FIGURE 16

FLOODING OCCURS



MISS + STEPAN LAND

MISS PILE

Radon

Vegetation Irradiated

Attach to water Droplets

Alpha Particles

Decays

Beta Particle

Gamma Rays

Underground Contamination

Carried to homes

Radon

Surface contamination

CONTAMINATED SOIL CARRIED BY WIND OR WATER

CONTAMINATED WIND OR WATER

FIGURE 17

Radon gas can float over residential areas and decay over or inside homes. Alpha particles can attach to aerosols in air and be carried to residences. Contaminated dirt can travel to residential areas and decay there. Radionuclides can also be absorbed by vegetation which, if eaten, can irradiate the body. Gamma rays can pass from the site directly through homes.

REFERENCES

To use the reference corresponding to the footnote, match the number of the footnote in report to the same numbered footnote, in the footnote section following, get the page numbers and the letter by the footnote, match the letter to the book/reference here, and look up the page, table, or figure. The books can be found in any of the libraries in Bergen County, I used Maywood, and Johnson libraries, and the documents are all in the borough hall files.

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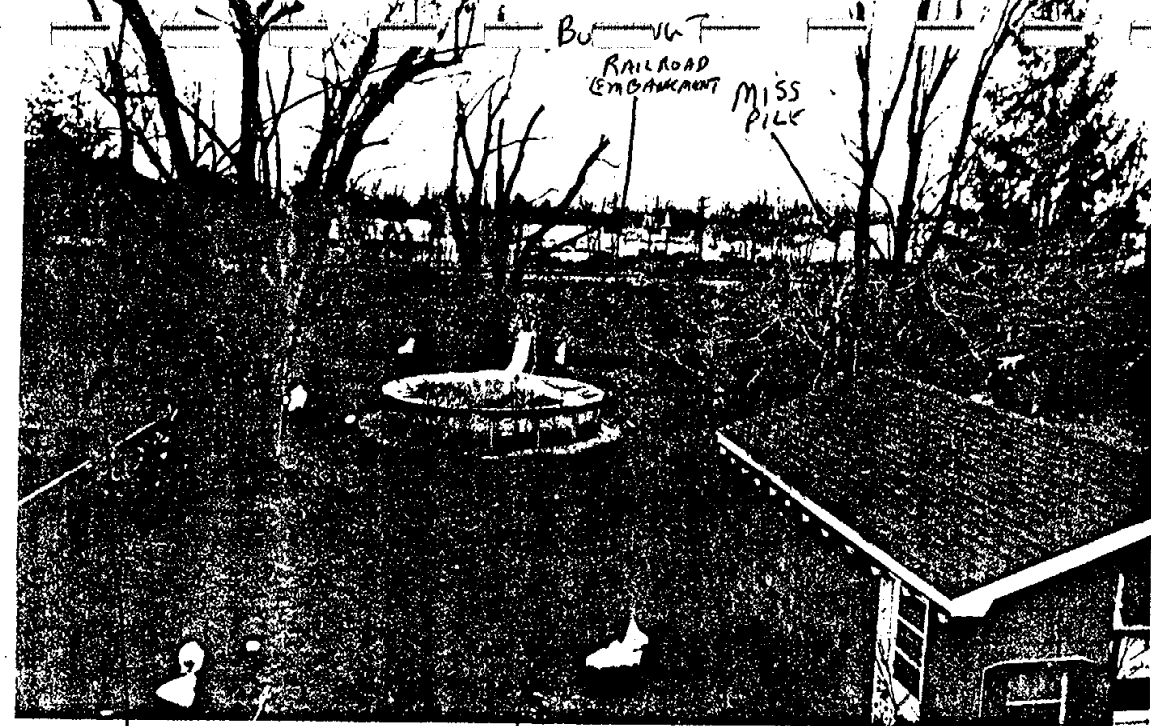
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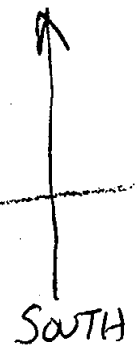


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146 W. CENTRAL

136 W. CENTRAL

142 W. CENTRAL



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142 W. CENTRAL AVE.

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142 W. CENTRAL

146 W. CENTRAL

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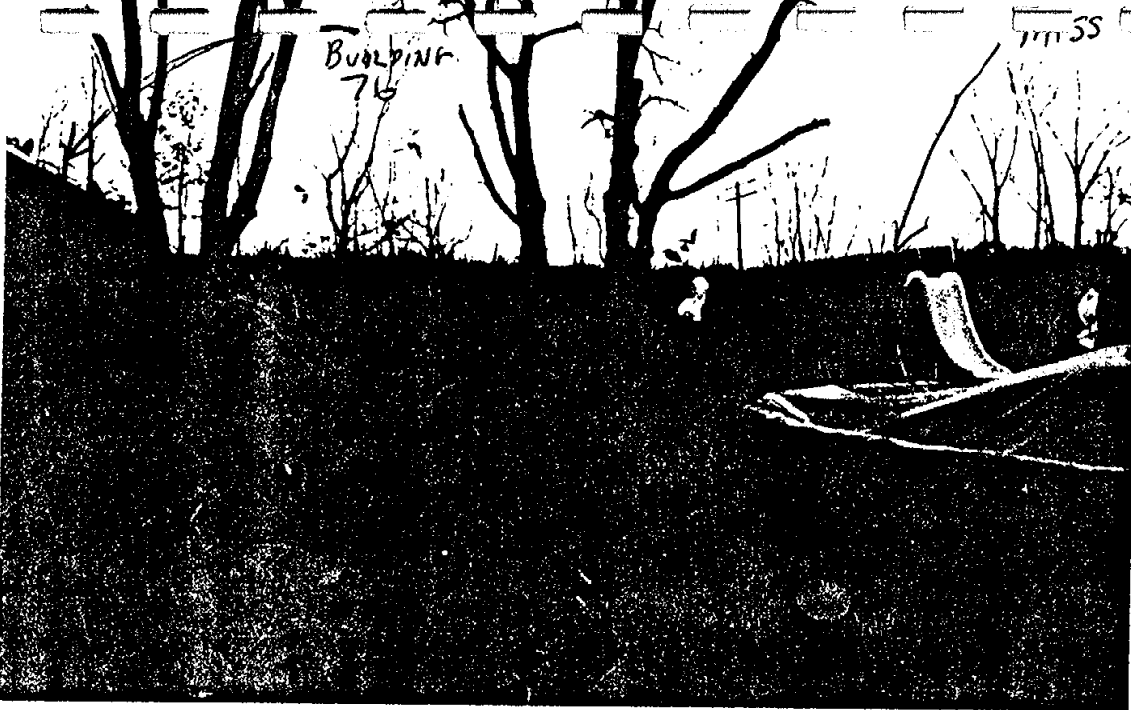
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BUILDING
76

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BACK YARD.



← RR. EMBANKMENT



SOUTH

W. CENTRAL

W. CENTRAL

W. CENTRAL

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Property Lines

Gully

Railroad Embankment

NORTH